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MAY 31 1924

Railway Age

FIRST HALF OF 1924—No. 26 NEW YORK—MAY 31, 1924—CHICAGO SIXTY-NINTH YEAR

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CONTINUOUS locomotive runs exceeding 500 miles are becoming frequent.

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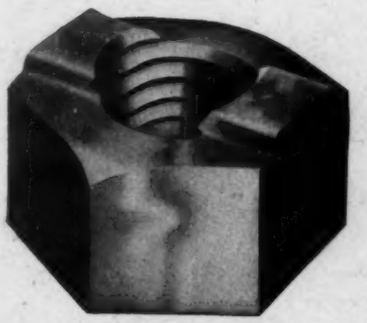

To hold parts tight against hours of constant jar and vibration, put a Grip Nut on every bolt.

Grip NUT COMPANY

Chicago, Illinois

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COUPLER RELEASE RIGGING

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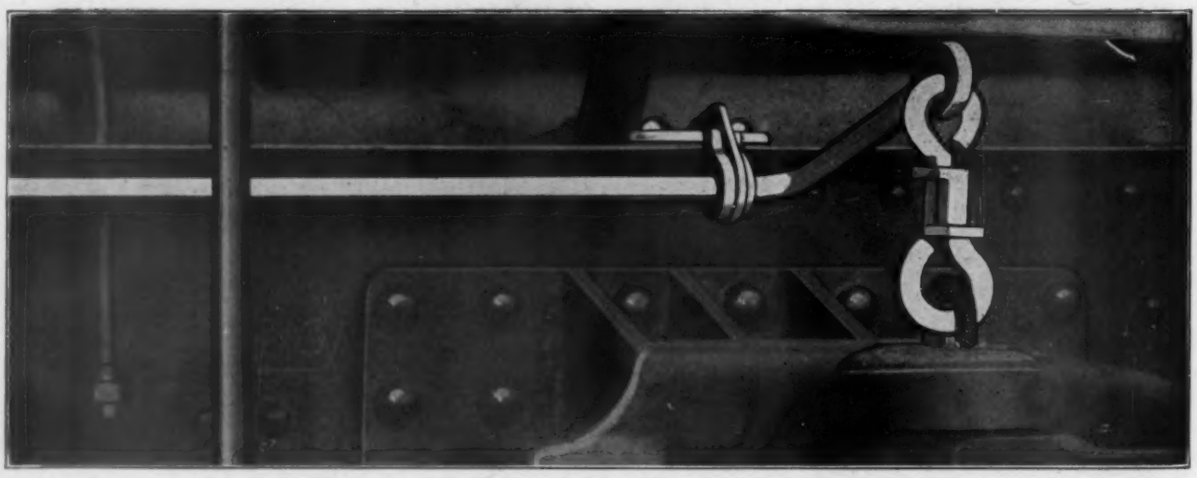

"What you don't have to spend for repairs is profit."

UNION RAILWAY EQUIPMENT CO.

McCormick Building, Chicago, Ill.

Montreal Richmond, Va.

Volume 76 Number 26

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EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Why Are Tie Purchases Delayed?

By deferring a certain proportion of the renewals required for a normal standard of maintenance the railroads are enabled to curtail their purchases of cross ties in any given year. Even for a period of two or three years it may be possible to get along with a smaller number of new ties than is demanded by the normal rate of renewal. However, in spite of this the railroads must and do buy large quantities of ties each year and even in years of limited purchases the consumption of ties is such as to call for a large production. In view of this it is difficult to understand why the railroads, knowing that a certain minimum quantity of ties *must* be purchased some time during the year, withhold their orders until the accumulation of deferred demands suddenly transforms a dead market in which the advantage is all with the buyer to a runaway market in which the buyer is at the mercy of the producer. The tie market is now at one end of this scale. The railroads are buying very few ties. However, if past practices are an indication of what may be expected the roads will continue to delay the placing of their orders in spite of low prices or the knowledge of the fact that they must eventually enter the market until the latest possible moment when they will all come into the market at once, with the result that there will not be enough ties to meet the demands and the prices will rise rapidly. The fact that many tie producers have been enabled to maintain their establishments in a state of solvency in spite of the enormous fluctuations in the tie business which occur from year to year is proof that they have been able to pass on to the railroads those extraordinary expenses which necessarily attend the operations in such an unstable market. In other words, it is the railroads rather than the tie producers that must suffer in the long run the consequences of the policy tie purchases.

Do the Railways Want Longer Rails?

The recent action of the Southern Pacific in ordering more than 131,000 tons of rails to be rolled in 39-ft. lengths has given impetus to the agitation for rails longer than the present standard of 33 ft. A few years ago certain mills agreed to roll small percentages of the orders from several roads in 39-ft. lengths without extra cost, but this concession was withdrawn and of late the roads have been able to secure longer rails only by the payment of a premium, which premium has tended to discourage this action. The action of the Southern Pacific in distributing its large order among those mills which were able and willing to roll rails to this length without additional cost has now brought this matter to a head. There is reason to believe that the roads can secure longer rails at a reasonable price at any time that they desire them enough to make their wants known to the steel manufacturers with unanimity. At present rails longer than 33 ft. can be rolled at several mills, including several of the largest and most modern, only at considerable inconvenience and at a sacrifice of production with a corresponding increase in cost. However there is no reason to believe that the steel manufacturers will permit this condition to stand in the way of longer rails whenever they ascertain that the railways are agreed in their desire for longer rails and in the length which they desire. The first step which the railways must take in this direction is to agree among themselves regarding the length to which they desire to go, for it is not to be expected that the manufacturers will give any great amount of serious consideration to the rolling of longer rails until the roads agree among themselves regarding the length of rails they want. That the roads have not as yet agreed among themselves in this respect is evidenced by the report which the Rail Committee of the American Railway Engineering Association presented at the annual convention last March in which it was stated that the committee had not as yet been able to secure agreement between the proponents of 39-ft. and 45-ft. lengths. At all events since the economy of a rail longer than 33 ft. is recognized, the roads should determine on the desired increase in length without further delay. After the length of the rail has been determined, the roads should make their desires known to the steel maufacturers with sufficient unanimity to warrant the manufacturers in making the necessary expenditures for the reconstruction of their plants. This cannot be done by half-hearted individual action.

Train Speed in America

On another page in this issue appears a short article discussing the speed of passenger trains in the United States. The writer has followed developments along this line for the past twenty years. He observes that "the United States still leads the world in long-distance, high-speed trains" in spite of the fact that the schedules of the fastest of these trains have been materially reduced during the last two decades. He uses the term "long-distance" to mean trains making a run in the neighborhood of 1,000 miles and lists several trains which make runs of this length at creditable speeds. It might be pointed out, however, that to maintain the high-speed championship in this category is no great honor, since there are few countries in which runs of such length are possible. It is in distances from 500 miles on down wherein it is possible to make fair comparisons between the speed of our trains and those in Europe and here, it must be admitted, the English railways appear to have a slight advantage over our own. One fact about the matter of train speeds in this country which is brought out by our correspondent is that practically all the runs where notable speed is made are east of the Mississippi and north of the Ohio. Schedules in the West and South tend to be considerably slower. Whatever may be said about train speeds on this continent, however, it must be admitted that, generally speaking, passengers are satisfied with them. The subject of train speeds and proposals for accelerating them are not nearly so popular here as in England, where schedules average somewhat faster. Probably the vogue of night traveling and greater average distances have a great deal to do with this attitude on the part of the American public. A 15-minute reduction in a 13-hour schedule on an over-night run would not add ma-

terially to the comfort of the passenger. On the other hand, the larger percentage of single track line in this country and the predominance of freight traffic make the introduction of high-speed passenger trains most uneconomical because of the way in which they "tie up the road." If, however, at any time the American public desires accelerated train service and is willing to pay for it, it will doubtless find railway officers quite willing to meet their demands insofar as they are practicable.

Difficulties of the Crossing Problem

The cost of separating grades at highway crossings is rightfully borne by the municipality (or state) jointly with the railroad. The proportion chargeable to each party may vary considerably in the case of different crossings. In many cases the public authorities have made the railroad company's share unduly large; mainly because they have the whip-hand. City officials find it easy to say that the railroad can recoup itself by its high freight rates. In any event, however, the primary responsibility for taking action rests on the town, city or state, and it is safe to say that the neglect of such officers to act, referred to in a recent editorial in the Birmingham Age-Herald,* is due (where there actually is neglect on the part of competent officers) to the conviction that the tax-payers cannot stand the great cost of bearing their equitable share. The implication that nothing is required of the municipality but to issue a command to the railroad is decidedly misleading. The editorial referred to also misses the mark when it says that the railroads seek to escape spending their money for either of the two things now demanded by the public—grade crossing removal and automatic train control. The primary trouble is that the railroads have no money to spend. With them the first point is, or should be, to get from the government the authority, and a *workable plan,* for earning the sums which the authorities propose to require them to spend. Except in the cases of a very few exceptionally prosperous roads it is wholly fair to say that this is the only rational way of approaching the problem. Cities and towns, possessing the power to levy taxes on all citizens and all property may, and do, make costly improvements with borrowed money, leaving the loans to be paid by the next generation; but a railroad, liable to be subjected to some new starving process by each new legislature, is not warranted in taking the responsibility of thus putting burdens on the future. It will be said, of course, that our railroads already do make improvements out of the proceeds of bonds, just as freely as do the cities and towns. But that was before our legislators had become so remarkably proficient in bleeding the railroad treasuries. Today no railroad dares to plan expenditures for the future except in matters which cannot possibly be deferred. The main significance of the Birmingham editorial is in its indication that the need of doing *something* toward mitigating the crossing evil is increasingly recognized. The need, of course, is for strong and concerted campaigns, carried to the doors of the legislatures. The Age-Herald ought to arouse every editor in Alabama.

*From the Birmingham Age-Herald May 19, 1924.—"There seems little consistency in the arguments advanced by railroads against efforts to force them to invest large amounts in automatic train-control equipment, on the plea that grade crossings are causing many more deaths, and are therefore a more important consideration. The argument would be well enough, if they actually proceeded to removal of dangerous crossings. Cities the country over have been pleading for protection from grade crossings for years; yet all too little has been done in that direction. Practically no relief has been provided, though pleas for protection have been made for a generation. It would appear that what the railroads are after is not to be relieved of a heavy expense for automatic train control while the grade-crossing problem confronts them, but to escape both of these requirements. Undoubtedly the crossing menace demands first consideration, while the authorities upon whom rest a direct responsibility and obligation on behalf of the public welfare have accomplished little towards requiring the railroads to act . . . . ."

Seeking Perfection in Details

"PATIENT CONTINUANCE IN WELL DOING" is a word of holy writ concerning personal duty which contains a valuable principle of success in life. The thought comes to mind on reading three recent papers on railroad operating practices.

The first paper, by R. A. Munsch, of the Lehigh Valley, presented before the Central Railway Club, at Buffalo, was abstracted in the *Railway Age* of March 22, page 788. Mr. Munsch set forth in very careful detail the minute points which must constantly be watched to be able to move single cars of freight through a large yard without wasteful delays. The second paper, by C. G. Johnson, of the Erie Railroad, printed in the *Railway Age* this week, gives a similar outline of one branch of the careful work that must be done to handle a thousand shipments through an outbound freight house in a day and come out with a record free from errors. The third paper, which is too long for reproduction here, is a freight claim prevention circular recently issued by Charles H. Allen, assistant to the general manager of the Grand Trunk Lines in Michigan. This is a damage-prevention circular, though Mr. Allen uses the stereotyped phrase, "freight claim prevention." He fills four large pages with instructive and striking comments on the right things to do, and the wrong things to be avoided, in the effort to earn twenty million dollars in a year by the transportation of freight, without having to pay an unreasonable percentage of this sum in bills for damages. In beginning his circular, he calls attention to the fact that in 1923 the payments of his road for freight damages were a little under one per cent of the gross freight receipts, a record which was better than 1922, and much better than 1921; but his plea is to cut this loss down to one-half of one per cent. "It can be done. Get the cause, always; then we can apply preventive measures."

In all three of these papers the one point that even the tyro will notice is that the entity called "perfect service," which the chief operating officer desires to present to the public, and which the advertising department wishes, every day, to ask the public to appreciate and praise, is made up of innumerable individual acts, for each of which some one employee, usually in an obscure position, must hold himself responsible. To the outsider this means, simply, a feeling of wonder that so complicated a machine can ever be made to work with tolerable smoothness. But to the insider there is no time to stop and wonder; the issue is, "Can I accomplish 100 per cent *in my part?*" Not all of us are in the position of the engineman, who, by inattention for 15 seconds, may wreck a car filled with passengers; but everyone whose duties are discussed in either of the three papers referred to has to realize that a very small error may call for a very heavy damage payment.

And the term "error" includes not simply positive acts or definite policies; sitting in an easy chair and allowing time to fly past may be an error if it means failure to read a circular of instructions which, if properly and seasonably studied, would prevent a failure of duty the next day.

All of the foregoing is intended mainly as an introduction to a few comments on the last one of those papers, the Grand Trunk circular. The point about neglecting instructions is suggested by a group of "reminders" which form a part of Mr. Allen's document. Of 24 reminders,* four begin with an injunction to *read* certain instructions theretofore issued; four illustrations of the fact that a large part of the work of the supervising officer consists of efforts to get employees to fix in their minds and to make usable certain definite instructions or orders or information that they already know.

These four exhortations indicate Mr. Allen's way of taking the shortest cut to his point—he does not waste words on a

* See *Railway Age*, May 24, page 1286.

new order, to be buried in a file with the old one—while at the same time they remind us of the weakness of *all* circulars. Circulars do not get answers. Until the answer is got, the success of the process of putting an idea into the head of the employee is unknown. It is greatly to be desired that railroad officers should get the habit of taking as a model, not the lecturer of the cramming school, but the teacher in the private preparatory school, who not only goes through the motions necessary for fitting the boy for college but, *at any necessary expenditure of time*, gives enough attention to the responses of the pupil to make sure that he actually learns; or else expels him from the school.

On general principles, therefore, we are taking Mr. Allen's circular as the occasion for condemning so much dependence on circulars—it is a fault that we all are guilty of—but at the same time must commend him for going farther than any one else has gone (in this field) in the effort to get results from his circular; he ends up with an invitation to *every employee* to respond, in writing. He says "A regional committee consisting of the heads of the various departments has been formed on the Western Lines for the purpose of coördinating the handling of freight claim prevention and wage matters; and each and every employee is invited to address me, as chairman, and offer any suggestions as to the improvement in the handling of this company's business through which we may be able to prevent claims or improve the working conditions of our employees."

This idea, followed to its logical conclusion, will lead to the best possible results in increased efficiency. Many of the suggestions offered will be of but slight value; but Mr. Allen will have opened the way for the adoption of a truly business-like course in efficiency. That is, a comprehensive scheme of practical questions, definite answers, re-examinations and actual study. An effective scheme recognizes progress in a definite way which the employee can appreciate; and it involves also recognition of poor work, lack of progress and need of demotion or even reprimand. Unless his forces are different from those of every other road he will find a great amount of undeveloped ability, and unlimited room for improvement.

Such an efficiency program would be quite costly, of course; and would take much time; but why not start it? Why should not the freight handling department aim to instruct and qualify its employees with just as much care, intelligence and persistency as enginemen are instructed in the operation of air brakes? Thus instructed, the men would have their minds so enlarged that the task of "patient continuance in well-doing" would be cheerfully endured even in the dullest times. Many men could be changed from routine workers to real enthusiasts.

Some quotations from Mr. Allen's "reminders" are printed in our news columns.

Freight Rates and the Cost of Living

IN SPITE OF THE FACT that politicians continue to attack freight rates as excessive and to introduce bills in Congress to compel drastic reductions of them, freight rates continue to be relatively lower than almost anything else the public has to pay.

Furthermore, although railway employees continue to seek advances in wages their average wage continues to be relatively much higher than the cost of living.

Statistics of the Bureau of Labor Statistics show that in March, 1924, wholesale prices averaged 55 per cent, and in April 53 per cent, higher than in December, 1914. The average freight rate per ton per mile in February, 1924, the latest month for which the figure is available, was 51½ per cent higher than in the railway year which included December, 1914. Thus it will be seen that while both commodity prices and freight rates have been declining, it is still true that freight rates show a smaller increase since before the war than the wholesale prices of commodities.

The Bureau of Labor Statistics also compiles and publishes data regarding the cost of living. Its latest report shows that on the average the cost of living in the United States in March was 65 per cent higher than in December, 1914.

The average compensation paid by the railways to employees in the fiscal year ended June 30, 1915, was $830, while the latest wage statistics available indicate that the average compensation this year is running at the rate of $1,620, an increase over the year ended June 30, 1915, of 95 per cent. The average hourly wage in the year ended June 30, 1915, was 27 cents, while in February, 1924, it was 64.62 cents, an increase of 139 per cent. The difference between the increases shown in the annual and hourly earnings of employees is, of course, due to the reductions that have occurred in the hours of work of employees.

Since it is sometimes alleged that the increase in freight rates has been one of the principal causes of the increase in the cost of living, it is interesting to compare the increases that actually have occurred in freight rates with the increases that have occurred in the cost of the various things entering into the cost of living. The statistics of the Bureau of Labor show that, in March, 1924, the average cost of food was 37 per cent higher than in December, 1914. This was smaller than the increase in the average freight rate which was 51½ per cent. On the other hand, the increases shown in other things included by the Bureau in its estimates of the cost of living were as follows: Clothing, 74 per cent; housing, 67 per cent; fuel and light, 80 per cent; house furnishing goods, 113 per cent; miscellaneous, 95 per cent. In other words, the increase in the average freight rate was less than the increase in the cost of any thing included by the Bureau in its estimates of the cost of living except food.

Summarizing, the average increases shown are as follows: Average freight rate, 51½ per cent; average wholesale price of commodities, 53 per cent; cost of living, 65 per cent; average annual earnings of railway employees, 95 per cent; average hourly earnings of railway employees, 139 per cent. Anybody who can extract from these statistics an argument in favor either of a reduction of freight rates or an increase in railway wages is welcome to show the entire disregard of all the rules of logic necessary to enable him to do so.

Improvements in the Standard Train Rules

THE changes in the standard train rules adopted by the American Railway Association at Chicago on May 15 are to be classed almost uniformly as desirable improvements. The attempt to secure agreement among the diverse minds interested in the rules is always a matter of great difficulty, in this field, and the present committee is to be credited with making considerable actual progress—as distinguished from the process, very familiar in past years, of settling most of the disputed questions by inserting blanks in the rules or by omitting the rule altogether; though this necessary evil is still present with us—and is far too familiar.

The principal changes are set forth in another column. Those in Rules 501, 509, 104, 17 and 11 are perhaps the ones which will attract the most attention. Number 17, requiring the dimming of bright headlights, ought to receive careful attention everywhere, as it is highly desirable that

practice in this matter be made uniform throughout the country.

The modification of Rule 34 which henceforth will require all members of a train crew to cooperate in observing signals, seems to be an attempt to deal with the problem, which faces every superintendent, of enforcing compliance with this requirement on the part of enginemen and firemen; but the committee does not tell us whether it sees any prospect of success in this direction.

The very cautious action of the committee on Rules 71 and 72 is characteristic. It is understood to be the outcome of a determined effort in committee to make the "positive meet" the recommended practice instead of merely a suggestion; but as only one road, the New Haven, manifests any enthusiasm for the simpler (and safer) practice, the result cannot be called surprising. The American Railway Association is extremely conservative or it is nothing!

On principle, as regards safety, the positive meet is indubitably superior to right by direction, for it eliminates chances of error in reading or computing time. Everyone who believes whole-heartedly in the block system should approve it, because it makes safety depend on *place* alone, instead of on place and time combined; that is to say, it makes full use of the space-interval principle.

When we come to Rule 501, the New Haven's practice receives opposite treatment; it is approved. The rule requiring the speed of fast trains to be slackened at caution signals has been in force on that road for a dozen years. Neither the New Haven rule nor that formulated by the committee can be said to be a masterpiece of strong and lucid language; but evidently the fundamental principle, that the engineman shall be required to *do something*, at or before the time he passes a cautionary signal, is now destined to become the general practice throughout a large territory.

Looking back at these numerous changes, the result of a great amount of laborious committee work, and at the Standard Code as a whole, perhaps the comment most appropriate to be made by this journal, which for 30 years has advocated the block system as the only safe method of train operation, is that each new revision of these fine-spun rules only serves to make the virtues of the space interval shine the brighter!

Removing Effects of Shop Employees' Strike

STATISTICS regarding the condition of locomotives and cars and expenditures for maintenance of equipment show that the effects of the shop employees' strike of 1922 are gradually disappearing, although they are still felt.

In March, 1922, which was just before the great coal strike began and three months before the shop employees' strike began, the expenditures of the Class I railways for maintenance of equipment totaled $106,133,000. In June, 1922, when the coal strike was in effect and which was the last month before the shop employees' strike, maintenance of equipment expenses were $102,330,000. The shop employees' strike caused a great increase of maintenance of equipment expenses. This increase was shown by the reports of operating expenses throughout 1923. The managements have been getting them more and more under control, however. The latest complete statistics of operating expenses available are those for March, 1924. In that month maintenance of equipment expenses were $113,293,000. This was almost $7,200,000 more than in June, 1922, just before the strike began, but over $13,000,000 less than in March, 1923. Maintenance of equipment expenses were $30,403,000 less in the first three months of 1924 than in the corresponding months of 1923.

Some of the railways made settlements with the striking labor unions in the fall of 1922, but a large majority never have settled with them. There has been much speculation as to which group of roads would gain more by the policy adopted by it. It was a foregone conclusion that the railways that settled would in the months immediately following the settlement effect the greater improvements in the condition of their equipment and reductions of their maintenance of equipment expenses. The important question was as to which policy would prove most beneficial to the railways in the long run.

The *Railway Age* has compiled month by month statistics showing the changes in the condition of equipment and in maintenance of equipment expenses reported by twelve roads that settled and twenty-nine roads that did not settle. We have already on a few occasions published these statistics as indications of the progress being made on the two groups of roads. The present seems an opportune time to bring the information up to date. For convenience we shall give the statistics regarding the maintenance of equipment expenses on a daily basis.

In June, 1922, the maintenance of equipment expenses of the 12 roads that later settled the strike were $877,489 a day. In July, 1923, eleven months later, their maintenance of equipment expenses were $971,555 a day, or about 11 per cent greater. Since the strike began they had reduced their bad order locomotives from 20.8 per cent of the total number to 15.2 per cent, and the number of their bad order freight cars from 16.7 per cent to 7.8 per cent.

In June, 1922, the maintenance of equipment expenses of the twenty-nine roads that did not settle the strike were $1,670,000 a day, and in July, 1923, they were $2,173,000, a day, an increase of 30 per cent. Their bad order locomotives had increased from 14.6 per cent, when the strike began, to 16.8 per cent, and their bad order cars had been reduced from 11.6 per cent to 7.7 per cent.

The foregoing figures show that up to July, 1923, the roads that settled had made greater progress than the roads that did not settle in overcoming the effects of the strike upon expenses and the condition of equipment.

In March, 1924, the maintenance of equipment expenses of the railways that settled were $907,070 a day. This was a reduction of 6.6 per cent since July, 1923. Meantime their percentage of bad order locomotives had increased from 15.2 per cent to 17.5 per cent, while their percentage of bad order cars had declined from 7.8 per cent to 6.3 per cent.

In March, 1924, the maintenance of equipment expenses of the roads that did not settle were $1,995,000 a day. This was a reduction of over 8 per cent since July, 1923. Meantime, their bad order locomotives had increased from 16.8 per cent to 18.4 per cent, and their percentage of bad order cars had remained unchanged.

There is, we think, only one interpretation that can be put upon these figures. This is that the roads that settled with the labor unions made substantially more rapid progress back to normal during the year immediately following the strike, than those that did not settle, while since then the roads that did not settle have been making somewhat more rapid progress than those that did settle. The total progress that has been made by the roads that settled has been relatively greater than the total progress made by the roads that did not settle, but recently those that did not settle have been gaining somewhat upon those that did settle.

It seems probable that future developments will make possible some very interesting and significant comparisons, if something does not occur to prevent them—such, for example, as the passage of the Howell-Barkley bill, one plain purpose of which is practically to force all the railways again to deal with the shop crafts unions.

Books and Special Articles of Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Census of Manufactures 1921. *Summary for the United States by Industries, Geographic Divisions, and States.* Prepared by U. S. Bureau of the Census. Printed material hitherto available only in mimeographed form. 141 p. Published by Government Printing Office, Washington, D. C. 15 cents.

Distributed and Undistributed Earnings of Corporations. Report from Secretary of the Treasury on profit, surplus, and dividends of corporations reporting net taxable income of $2,000 and over in 1922, in response to Senate Resolution No. 110. 68th Cong., 1st sess. Senate Doc. No. 85. "Transportation and other public utilities." p. 18. 132 p. Published by Govt. Print. Off., Washington, D. C.

On Fuel and Related Economies. Three booklets on various aspects of the fuel problem. Prepared by International Railway Fuel Association. Published by American Railway Association, Chicago, Ill.

Periodical Articles

Ford's Story of His Railway, by Samuel Crowther. World's Work, June, 1924, p. 161-166.

Grappling With the Grade-Crossing Problem, by Arthur C. Mack. Types of signs, public education, and other means of lessening accidents at grade-crossings. Illustrated. Motor Life, May, 1924, p. 11-13, 61-62.

How Sound Public Relations Between Public Utilities and Communities Can Best Be Developed and Maintained, by Paul C. Rawson. First prize paper. Forbes, May 24, 1924, p. 226-228.

The Locomotive of the Future. "Prophetic drawing," p. 385. Scientific American, June, 1924, p. 384-385.

New Note in Railway Publicity. Critical review of more recent publications evidencing "new spirit in British railway advertising." Modern Transport, May 17, 1924, p. 12.

Railroads and Shippers Sit at the Round Table, by Hiram Hertell. Describes the regional advisory boards. Forbes, May 24, 1924, p. 223-225.

Snowslides—Some Facts About Their Menace and Their Prevention, by D. S. Olson. The Chief of Planting, U. S. Forestry Service suggests that if you don't want trains delayed by slides in winter, don't start a forest fire in summer. Illustrated with pictures of railroads affected by slides. Scientific American, June, 1924, p. 404.

The Transandine Journey, by T. T. Whitney, Jr. "Up and down 8,000 feet in 125 miles." Illustrated. Stone & Webster Journal, May, 1924, p. 584-591.

An Underground Railway Which Londoners Will Not See. The New Post-Office Railways Now Being Constructed Beneath London Streets. Sphere [London, Eng.], May 10, 1924, p. 151.

The Port of New Orleans, La. Prepared by Board of Engineers for Rivers and Harbors, War Dept. in Co-operation with Bureau of Research, U. S. Shipping Board. "Communications," including railways, p. 130-169. "The freight rate situation," p. 169-188. 230 p. maps, illustrations. Published by Govt. Print. Off., Washington. 75c.

TWO HUNDRED TWENTY-FIVE THOUSAND SHIPMENTS MONTHLY, measures the average business of the American Railway Express at Dallas, Texas, a city of 200,000 inhabitants. The pick-up and delivery service makes use of 45 automobile trucks, mostly White trucks of 2-tons or 2½-tons capacity. Each truck averages daily 78 shipments picked up and 100 delivered.

Letters to the Editor

100 Miles Per Locomotive Day

LOUISVILLE, KY.

TO THE EDITOR:

The editorial on page 1017 of your issue of April 26 entitled "One Hundred Locomotive Miles a Day" is interesting. In this connection your attention is called to my paper on this subject on page 1601 of your issue of June 23, 1923, reporting the proceedings of the Mechanical Division Meeting in Chicago at that time.

The following is our record of the months of January and February, 1924:

	Locomotives owned	Locomotives in service
Average mileage per freight locomotive day—January, 1924	93	125
Average mileage per freight locomotive day—February, 1924	100	128

This is the best showing we have made since we began to keep records on the subject, although we have seldom fallen below the goal you suggest—one hundred miles per day per locomotive in service.

C. F. GILES,
Superintendent of Machinery, Louisville & Nashville

Forecasting Railway Traffic

WASHINGTON, D. C.

TO THE EDITOR:

Dr. Parmelee, Director of the Bureau of Railway Economics, in his comments (*Railway Age* of March 15) on my article of February 9 emphasizes an aspect I sought to keep away from, namely, opinion prophecy. I believe in "open diplomacy" in statistics as well as elsewhere.

I said in that article "Our statistics should be our aids. We should not outrage them by our preconceptions, prejudices or fears. If factors of experience carefully and skilfully deduced present certain conclusions, we should use such in our consideration and not mutilate them." My mathematical thesis showed two conclusions, first that the railroad output, in ton-miles and passenger-miles was a true exponential function of the population, and second that such exponent was the third power. On such conclusions I made schedules showing with a population with annual increment of 1.6 per cent what is to be expected "as a normal of present conditions." An analyst of any activity or set of growth conditions is not interested so much in a prognostication, as a wager of one mind against another, as he is in finding out what the existing determining functions are, and whether they are continuing. If not continuing what is the basis of change, whether sudden or gradual, or whether a new contributing element enters.

Dr. Parmelee brings out categorically that there are two elements in the figure of 560 billion revenue ton miles in 1933, one which he calls "frank conservatism" and the other "smaller expectation rate of traffic growth." Such is the aspect to which I referred as evidencing stage-fright or lack of courage. (I trust Dr. Parmelee inferred no bitterness or anathema in those terms, as I meant none.) The expectant population has everything to do with expectant human activity and is a problem in itself. I set forth my "normal of present conditions" not as a prophecy or wager of opinion but as a "basic hypothesis in railroad forecasting." With such normal as a basic hypothesis we can observe the aspects of growth whether such is maintained on the normal or whether deviation therefrom appears. If such deviation appears then to locate the functional aspect of such deviation

in order that a desirable function may be augmented or an unfavorable one controlled.

From Dr. Parmelee's statement we would naturally believe that the figure of 560 billions was arrived at after deducting a certain amount, contingent on a "smaller expectation rate of traffic growth," and further deducting another amount concerning which he mentions may have been an "error on the side of conservatism."

I do not set the schedules of my article as my opinion, but as mathematical conclusions with all the supporting data given. If such normal gives the expectation on the basis of present conditions and a figure is put forth as a possibility 20 or 30 per cent at variance with such, it becomes of interest to all, to know the character of such variance. If a certain per cent is chopped off for conservatism and another deduction made for a change in the function of the rate of traffic growth, it would seem that the amounts of these deductions and the character of the change in functional growth should be stated in support of the figure given. If the figure of 560 billions is contingent on a deduction for conservatism and another deduction for expected functional change, the character of which is not stated, it does not beget so much confidence, irrespective as to whether it may be realized on a wagering basis or not.

I do not present this analysis in any spirit of controversy. My figure of 717 is not comparable with the 560. The 717 is on the basis of normal of present conditions while the 560 has incorporated other elements.

The student of the aspects of civilization is confronted now with emphasized importance with the character and amount of any change from the normals of past civilization. The disturbance of the war is now resolving into a stable orderly progress or growth. Wages, prices and many things have changed. In general, I think it will be admitted, that the present status of civilization is not retrograde with reference to that before the war. The average standard of living, the product per person, the consumption per person, the rate of accumulation of capital goods, do not any of them indicate a decadent civilization. This does not mean that growth functions do not change. An advancing civilization may carry a diminishing as well as an increasing function. Our problem, one and all, working together, is to segregate the contributing elements, that we may observe which of them are maintaining and of those that are not maintaining, what in amount and character is their tendency.

JOHN BALCH BLOOD.

New Accounting Classification

PHILADELPHIA, Pa.

TO THE EDITOR:

The two articles written by George G. Yoemans, in your issues of March 15 and April 12, 1924, on the subject of a special primary account for the expenses of the Purchasing and Stores Department, in the forthcoming revision of the Classification of Operating Expenses, are very interesting, and treat of the matter in a most convincing manner. The present classification is a hit or miss proposition, usually a miss, particularly if one is looking for the cost of any specified activity. The classification proposed by the Bureau of Accounts of the Interstate Commerce Commission is built up on the principle underlying cost accounting, i. e., the direct expenses for labor and material in each primary account. This is fundamental and the distribution of "overhead" is simply a matter of the proper arbitraries as related to the special matter under analysis.

Your editorial in the issue of March 15 refers particularly to the matter of comparability which is also dealt with by A. J. County in the same volume. The 1914 classification contains a large number of ambiguities and for this reason has resulted in a lack of uniformity in distribution, as evidenced by the questions and answers printed in Accounting Bulletin No. 15, issued by the commission in 1918, and the large number of similar queries submitted to the commission since that date, also to the disbursements committee of the Railway Accounting Officers Association. This failure to distribute uniformly items of expense tends to the production of figures which are not comparable with other roads and not on the same road from year to year. The classification must be written in simple railway language so that the man on the ground can make his report in such a way that the clerk who extends the "charge account" will be able to designate the appropriate primary account without having to refer to some official for a ruling. The tentative classification submitted by the Bureau of Accounts accomplishes this object principally by the reduction in the number of accounts and the elimination of prorating.

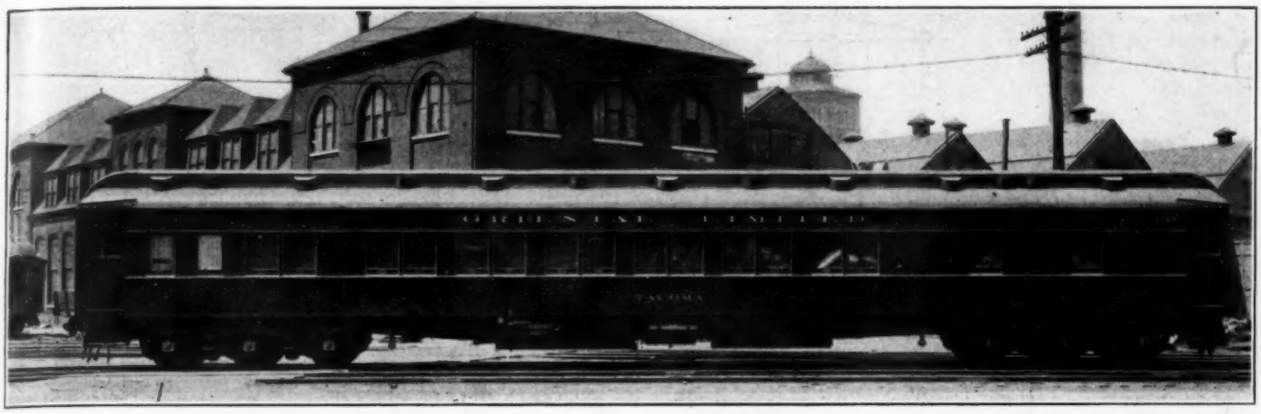
The principle touched upon by Mr. Yoemans of recognizing each department as a separate unit is carried out in the tentative issue and there is no doubt it will prove to be the best sort of check on unecomical practices. The proposal to divide the Purchasing and Store Expenses among the three principal general accounts is a poor substitute for the present distribution to primary accounts. One might, with equal propriety, set up primary accounts in the Maintenance of Way, Maintenance of Equipment and Transportation for the Accounting and Treasury expenses for the reason that these expenses have to do with the receipt, disbursement and accounting for the financial transactions growing out of the activities of these departments.

The new general account suggested by the Bureau to contain the amounts expended by the carriers for casualties to others is a step forward. In the 1914 classification the casualty accounts in Transportation follow "Other Expenses" indicating that they were, at that time, considered as "outside" the expenses for conducting transportation but were incident thereto. This view might be taken with all expenses as they are all incident to transportation which is the business of a carrier. The 1914 classification also provides separate primary accounts for casualties to persons in Maintenance of Way and Maintenance of Equipment. These accounts are not based upon responsibility for the expense, for if they were, Loss and Damage should also be similarly divided. One account for injuries to persons will insure accuracy and promptness in distribution without studying which of the three accounts the expenditure is chargeable, and quite often striking the wrong one, resulting in a lot of useless correspondence and a final correcting entry.

The principle contained in the tentative classification under discussion by the Bureau of Accounts, of charging only direct supervision to the general department accounts and segregating into one account all the supervision of a general character, affords a much better opportunity for cost accounting than the present classification where practically all operating officials above the rank of division engineer, master mechanics and train masters, are divided equally over the first three general accounts. With this class of expenses in one account suitable arbitraries could be supplied to properly allocate this "overhead" to the direct expenses for the purpose of a cost study. Such an allocation would embrace not only "operating" officials, but all the "general" officers of the carrier.

It should be understood that the classifications of accounts are in a constant state of evolution due to changes in methods of operating, and a more comprehensive study of matters of efficiency and economy and the proposed classification of operating expenses is a long step forward in making it possible for the management to see where the dollars go instead of concealing the facts by a system of prorating among the primary accounts.

JOHN HURST,
Assistant Comptroller, Pennsylvania Railroad System.

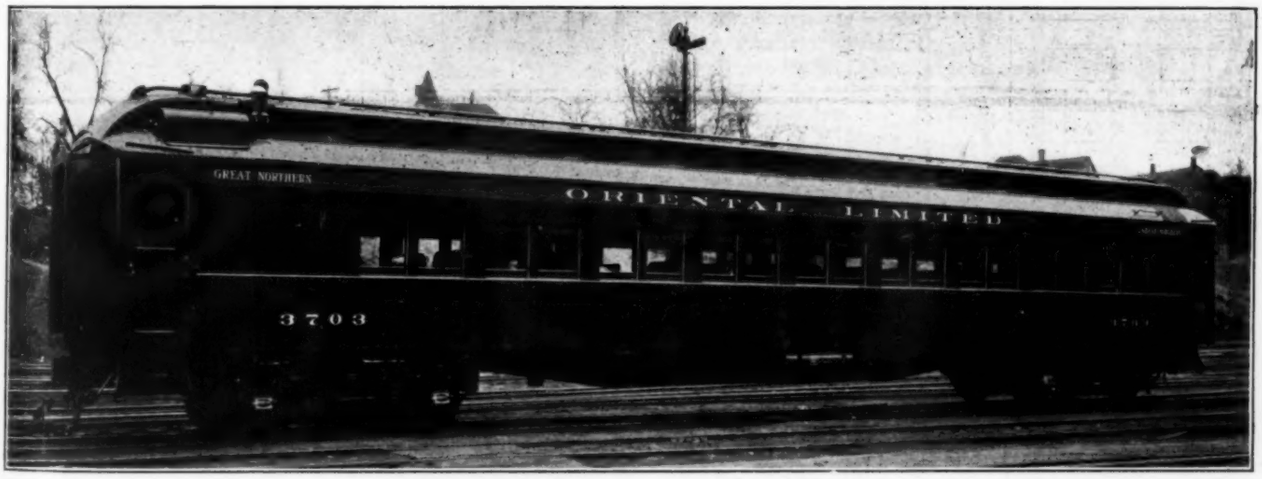


Modern Pullman Sleeping Car for the Oriental Limited

New Equipment for Oriental Limited Trains

Great Northern Cars of Improved Design Now on Exhibition Will be Placed in Regular Service June 1

THE GREAT NORTHERN has been preparing for some time to put in service greatly improved equipment on its Oriental Limited trains between Chicago, Seattle and Portland. The work of constructing the new equipment has now been completed and after being on exhibition for two days at the Union Station, Chicago, and making an exhibition trip with its own motive power to Portland, Oregon, the new train will be placed in service June 1. The complete equipment of each train will consist of the following: one dynamo baggage car, one smoking car, one first class coach, one Pullman tourist car, one Great Northern dining car, three Pullman sleepers and one Pullman observation car.



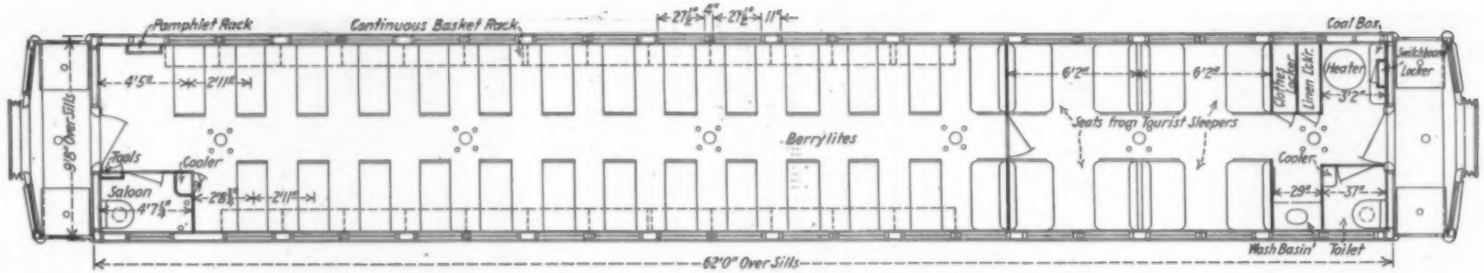
The New Oriental Limited Smoking Car

The head-end cars have been put in shape at the St. Paul shops of the Great Northern. The baggage car is a standard 70-ft. all steel car. The smoking car, as illustrated by the plan attached, involves a departure from the standard heretofore used in such trains, in that it provides space in the forward end for the accommodation of the dining car crew. Four tourist sections have been built in at the forward end of this car with sufficient locker and toilet accommodations for the crew. The intention is to make this space available to passengers in the day time, as there are always more passengers using the coaches in day time than at night. This arrangement will give the required space in the day time and very satisfactory accommodations for the dining car crew at night. This is a steel underframe, steel-sheathed car.

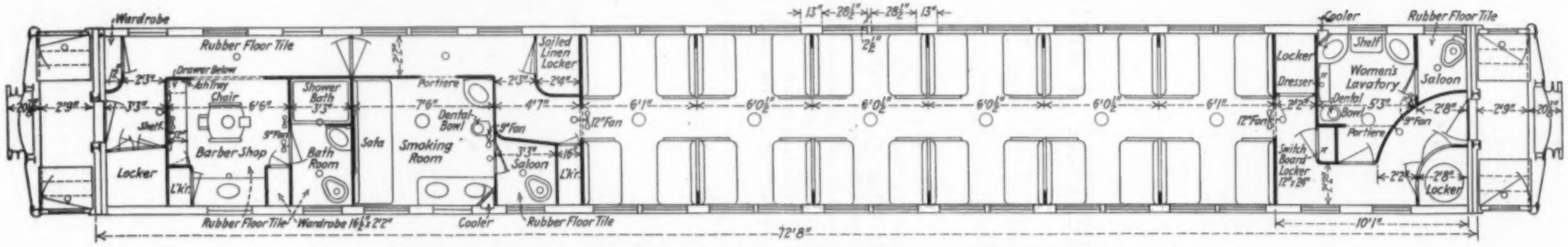
The first class coach is an all-steel car, seating 86 people. The arrangement of the coach is standard except for the provision of a women's lavatory across the aisle from the women's toilet.

The Pullman tourist car is a steel underframe, steel-sheathed car turned out of the Pullman shops in May, 1924. This car is divided into two sections—the forward part consisting of a 12 section tourist sleeper with women's retiring room and men's smoking room, while the rear portion of the car is occupied by a barber shop with shower bath, etc. This car provides much larger and better wash rooms than have heretofore been provided in tourist cars. The entire arrangement is shown in one of the drawings.

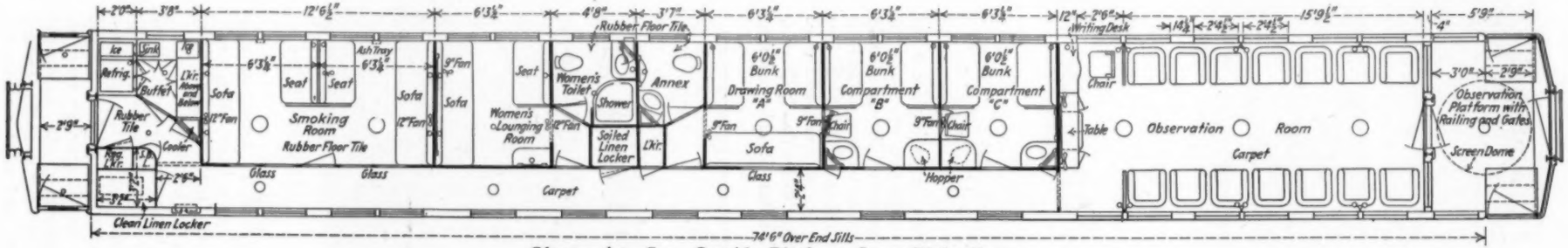
The dining car is one of eight new cars constructed by the



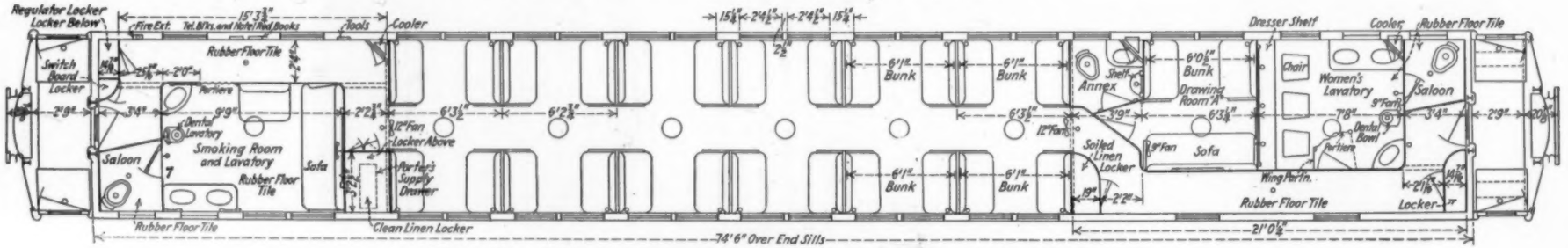
Smoking Car with Sleeping Accommodations for Dining Car Crew



Pullman Tourist Car with Larger and Better Wash Rooms Than Are Usually Provided



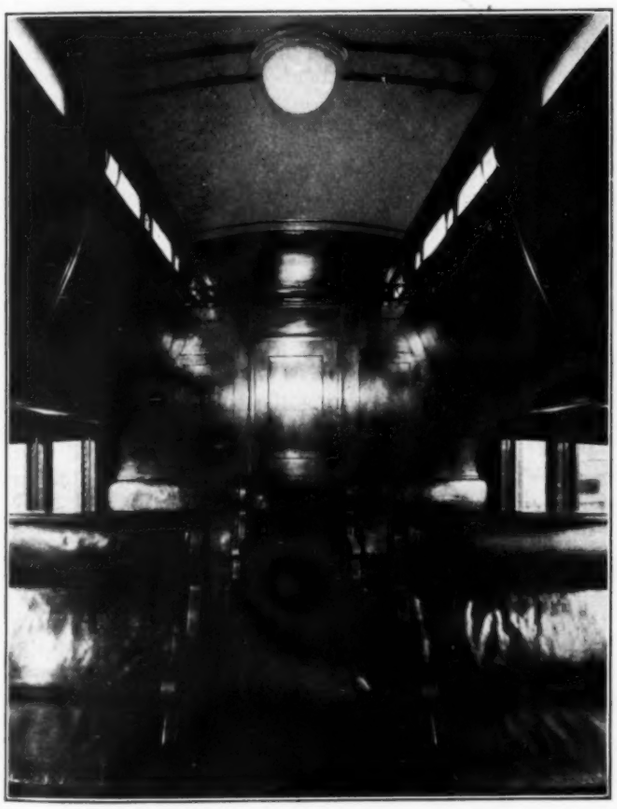
Observation Car—Outside Platform Seats Eight Persons



Floor Plan of Typical Pullman Sleeping Car—Large Women's Retiring Room

Pullman Company for the Great Northern and completed in May, 1924. These cars are all steel, and each accommodates 36 persons. The car is distinguished by its especially large and well-arranged kitchen. The decoration of the car is also somewhat unusual, in that it consists of light tones throughout, giving the restful effect of a well decorated room. The mechanical specialties used on this car are as follows: Commonwealth cast-steel six-wheel trucks, high equalizer type with pedestals cast intregal with the frame and a device for locking the trucks to the body of the car; 5½ by 10-in. journals; 36 in. rolled steel wheels; Simplex clasp brakes; Miner draft gear, type A-5-P-X; Miner buffer device, type B-10; New York air brake, UC-1612 equipment; Woods roller side bearings; Vapor heat, and Monel metal, used throughout in the kitchen and pantry.

The Pullman sleeping cars are entirely new all steel cars. These cars are distinguished from any heretofore turned out by the Pullman Company, first, by the better provision made for women in the women's retiring room, and by the scheme of decoration used in the cars. The cars, like other recent Pullman cars, have permanent headboards. They are tinted in light colors. There is no imitation of wood graining anywhere in the car, and the effect of the use of soft colors is good. A typical plan of the sleepers used is

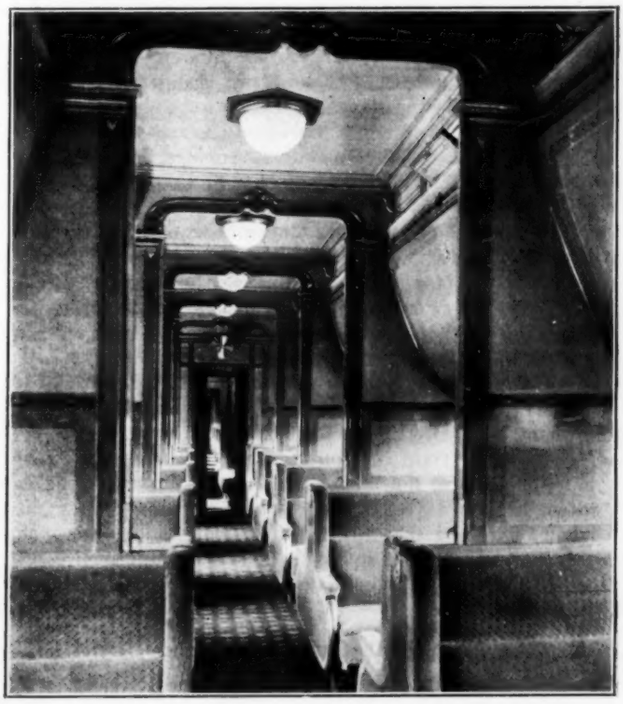


Berth Accommodations for the Dining Car Crew in the Forward End of the Smoking Car

illustrated. The mechanical specialties on these cars are as follows: Commonwealth cast steel six-wheel trucks, high equalizer type with pedestal frames cast integral and safety locking pins; clasp brakes, and 36½-in. rolled steel wheels on axles with 5-in. by 9-in. journals.

The observation car is a new all steel Pullman car completed at the Pullman works in May, 1924. This car provides at the forward end a smoking room for men, and a women's lounge room with shower bath for women. In the middle of the car a drawing room and two compartments are provided and at the rear of the car there is an observation room with seating accommodations for 14 people. The observation room has especially wide and high windows, and the car has a large outside platform, seating eight persons. This car is decorated like the Pullman sleeping cars, and its mechanical details are similar to the sleeping car.

The exterior of all cars in the entire train is painted the olive green color which is the standard body color of the Great Northern, with the letter board of a lighter green. All



Interior of the Pullman Sleeper—The Finish Is in Soft Tones with No Attempt at Imitation Graining

cars have the words "Oriental Limited" in large letters across the letter board, and at each end of each car the words "Great Northern" or "Pullman," as the case may be, in smaller letters.

The photographs give a fair idea of the interior and exterior of the train. The light weights of the various cars are shown in the following table:

Dynamo baggage car	151,900 lb.
Smoking car	112,400 lb.
First class coach	139,700 lb.
Pullman tourist	153,500 lb.
G. N. dining car	167,000 lb.
Pullman sleeper	162,000 lb.
Pullman observation	162,500 lb.

THE OUTSTANDING PROBLEM of the American railways is that of credit, and this depends upon an adequate return from operation, President C. R. Gray, of the Union Pacific, told a conference of Missouri and Kansas bankers at Kansas City, on May 21. Transportation rates cannot safely be reduced so long as the railroads' cost of living remains at the present high level.

M. L. COUNTRYMAN, vice-president of the Great Northern, in an address before the Minneapolis Association of Credit Men in Minneapolis, on May 20, denounced the efforts of politicians to reduce freight rates as nothing but propaganda designed to secure votes. "A moment's thought will make it clear that all this talk about reducing rates 10, 25 or 30 per cent from what they are at present calmly ignores the fact that it takes 97 cents out of each dollar received out of the present rates to pay actual operating expenses, taxes, interest and rent."

Railroad Legislation in Congress

WASHINGTON, D. C.

THE question as to whether any vitally important railroad legislation is likely to result from the present session of Congress seems to depend largely on whether Congress is able to carry out the present plans for an adjournment about June 7. The House committee on interstate and foreign commerce has just begun hearings on section 15a and is planning to hear several witnesses and the Senate committee, after holding hearings on the subject for several weeks, seems to have lost interest in it. It is reported that its members have about decided to content themselves with the passage of the Smith resolution, which provides for the lowest possible lawful rates for agricultural products, and which may be combined in some way with the Hoch resolution in the House. The Senate has now passed all the bills which the Senate committee has reported, except the Gooding resolution for an investigation of railroad propaganda, which was discussed in the Senate on Monday but was displaced by the unfinished business and went back to the calendar, and they are awaiting an opportunity for consideration in the House.

Representative Snyder of New York has introduced a bill, H. R. 9436, providing for a penalty of $1,000 a day for each day that any railroad refuses or neglects to comply with an order of the Interstate Commerce Commission for an installation of automatic train control and also for a fine of $5,000 or imprisonment for not more than five years for any person in whom has been vested by action of directors or of the president of a road the duty to cause compliance with such an order, if an accident involving a loss of human life occurs upon the railroad which is attributable to non-fulfilment of the order.

Pullman Surcharge Bill

A bill to abolish the Pullman surcharge, S. 862, was passed by the Senate on May 22 at an evening session called for the purpose of considering unobjected bills on the calendar. The bill was passed without a word of debate and without even a recommendation from the committee on interstate commerce. Many bills for this purpose had been introduced but the committee had held this back in the hope that the Interstate Commerce Commission would settle the matter in the case now pending before it on which argument was held on May 8. On May 20 Chairman Smith of the committee had reported the bill out without recommendation, in order to get it before the Senate, but he had also written a letter to the Interstate Commerce Commission asking if it could not render its decision before Congress adjourns and taking the position that it would be much better for the commission to decide the case itself than for Congress to act directly on rates.

The bill as passed would make it unlawful for a carrier to charge for transportation in any parlor or sleeping car any fare in addition to that charged for transportation in a day coach but with a provision that this shall not prevent just and reasonable charges for the use of accommodations in parlor or sleeping cars by companies owning such cars.

The Labor Bill

While it is understood that the advocates of the Barkley labor bill in the House are trying to get a rule to call up the bill before June 2, the next day on which it can be brought up under the general rules, the bill has encountered further delay in the Senate. The Senate committee on interstate commerce on May 22 held a meeting for the purpose of considering a report of its sub-committee to which the Howell bill was referred and after a protracted consideration of amendments took no action. The sub-committee was composed of Senators Couzens, Gooding and Dill, but on account of the illness of Senator Couzens, the report was submitted by Gooding and Dill, including an important amendment proposed by Senator Howell, who had introduced the bill in the first place as it had been drafted by the railroad labor organizations but who is understood to be acting independently in proposing the amendment. The principal change is a new section 8 of the bill, as follows:

"If, notwithstanding the provisions of this act, any lockout or strike or other dispute between a carrier and its employees should interrupt the operation of any carrier to such an extent as in the opinion of the President to constitute an emergency, involving a serious interference with, or obstruction of, interstate commerce and (or) the transportation of the mails, he is hereby authorized to direct the attorney general to apply for the appointment by a court of competent jurisdiction of a receiver to control and direct the operation of such a carrier and to manage its properties during the continuance of such an emergency. Any district court of the United States within whose jurisdiction is located the principal office of such a carrier shall be authorized in a suit so instituted by the attorney general under the direction of the President and in the name of the United States, to appoint a receiver as above provided, which receiver shall be a person or persons neither financially nor otherwise associated in interest with the management or employees of said carrier but each such receiver shall be an impartially disinterested individual. The President is hereby authorized to make one or several recommendations of a person or persons whom he deems competent and suitable for such appointment as such a receiver or receivers."

Senator Howell says that the labor organizations for whom he introduced the bill do not favor the amendment but that it is his own idea to insert in the bill a potential force designed to induce both managements and employees to reach agreements, or at least agreements to submit to arbitration, by holding forth an alternative that neither would like. He said that this amendment is intended to meet the objection to the bill that it includes nothing to require a resort to arbitration and that it would protect the public interest by assuring the continued operation of a railroad, because under the receiver appointed on request of the President the men who desired to work would have the protection of the government. He seemed to be of the opinion that the idea of a receivership would be equally obnoxious to the railroads and to the unions. Some opposition to the amendment was expressed in the committee meeting but Senator Howell said he was still hopeful of getting action on the bill at this session.

Amendments were also proposed to divide Board No. 4, as provided for in the bill, into two divisions, one with jurisdiction over employees engaged in work in connection with water transportation and the other with jurisdiction over a miscellaneous group of subordinate officials. Each division would be composed of six members and the salaries of members and secretaries would be less than those proposed for the other three boards of adjustment.

Steel or Steel Underframe Baggage Car

The bill S. 863, providing that after July 1, 1927, express and baggage cars shall be of steel or steel underframe construction with certain exceptions and otherwise constructed and fitted as provided by the bill or by orders of the Interstate Commerce Commission, was passed by the Senate on May 22.

Northern Pacific Land Grant

The Senate on May 21 passed the bill directing the Secretary of the Interior to withhold until March 4, 1925, his approval of the adjustment of the Northern Pacific land grants pending an inquiry by a joint committee of both houses of Congress into the land grants for the purpose

of considering legislation to meet the respective rights of the railroad company and of the government.

Representative Newton has submitted to the House a favorable report from the committee on interstate and foreign commerce on S.2704, the bill passed by the Senate amending paragraph 3 of section 16 of the interstate commerce act to extend to three years the time within which shippers may file suits to recover overcharges.

House Committee Hearing on 15a

The House committee on interstate and foreign commerce continued on May 22, 23 and 24 its hearing which was begun on May 21 on section 15a of the interstate commerce act. The hearing is not confined to any particular bill to repeal or amend the section but under the motion adopted is for the purpose of considering the general subject. Commissioner Esch has been on the stand replying to miscellaneous questions put by members of the committee regarding the commission's administration of the transportation act, with some assistance from W. V. Hardie, director of the commission's Bureau of Traffic. Both Mr. Esch and Mr. Hardie told the committee on May 24 that to repeal section 15a would have a detrimental effect both on the carriers and on the public. Mr. Each used the word "disastrous" and both said that a repeal of the section could not have any immediate effect to reduce rates. The hearing was to continue on May 28 with Mr. Esch still on the stand and Chairman Winslow has obtained authority from the committee to invite Walker D. Hines, former director general of railroads, to testify. When Representative Huddleston suggested that it might also be well to invite another former director general "if he were not too busy running for a presidential nomination," Chairman Winslow said that "he would only have to refer to Mr. Hines or Mr. Payne, he wouldn't know about it himself."

Much of the time on May 22 was taken up with a continuation of the controversy started by Representative Hawes the day before when he suggested that it would be well for the committee to know whether those advocating a repeal of 15a are so much interested in that as they are in government ownership. Representative Huddleston had then suggested an investigation as to the railroad securities held by Mr. Hawes' constituents. Mr. Hawes, when the hearing was resumed, insisted on putting into the record a statement that he had never owned any railroad securities or represented a railroad and that 98 per cent of his constituents were of the working class. Mr. Huddleston replied that no member of the committee had any legitimate concern as to his private motives. Representative Shallenberger, whom Chairman Winslow had suggested as a possible witness in favor of a repeal, said that he had not asked for the hearing and that he did not consider that he was on trial or subject to be interrogated by any one as to his personal motives.

Representative Hoch asked in what way section 15a had changed the policy of the commission. Mr. Esch said that there was a feeling that the commission before its enactment had had no sufficiently definite standard of reasonableness and Congress had that it mind when it decided that rates as a whole should be based on valuation. The commission of course had given consideration to a fair return, he said, but until 1917 it had never been called upon to pass on the rates as a whole. Mr. Esch was asked numerous questions regarding the status of the recapture fund, which he said had been increased since he began his testimony to something over $4,000,000. The commission has thus far not attempted to make any use of the fund because a large part of it until recently had been paid under protest and it had been advised by its chief counsel that money it held under protest should not be loaned. He said the commission is now trying to work out some basis on which to effect preliminary settlements with the railroads as to the amount of their excess pending the completion of the final valuations. One considerable road, he said, had reported its value on a basis of $320,000 a mile.

Mr. Hawes called attention to the fact that 19 large roads had joined in the suit in the Supreme Court against the recapture clause and asked if any of the weak roads had attacked section 15a. When told there had been none he said the situation seems to be that the stronger roads are not so enthusiastic for the law as the weaker roads and he asked if the repeal of the law would not have a worse effect on the weaker roads than on the strong roads. Mr. Esch replied that it seemed to him that there was an inconsistency on the part of the railroads in seeking the benefits of section 15a while seeking to escape from the effects of the recapture clause, but he pointed out that there had always been strong roads that had excess earnings without any recapture. The repeal of the section now, he said, would be disastrous both for the public and the railroads, in his personal opinion, since both the public and the railroads have become adjusted to it and the railroads last year spent large sums for improvements to increase their service in reliance on it.

Mr. Hardie, who was also asked what would be the effect of a repeal, said that in his opinion it would tend to break down the feeling of confidence which has resulted from the fact that the railroads last year were able to handle a peak traffic so satisfactorily whereas in some former years because of a growing lack of confidence in the railroads as investments congestion had resulted from a shortage of railroad facilities. He also thought it would have a detrimental effect to wipe out the group plan of making rates, which he said is necessary to equalize the rates as between strong and weak roads. When Mr. Hawes asked what would be the effect on rates of a repeal Mr. Hardie said that, while in the first instance the effect of the law was to increase rates because it was the purpose to help the weak or average roads and improve the railroad situation generally, he did not believe a repeal would have any immediate effect to reduce them, because the commission had always tried to make rates that would allow a fair return and in the long run he did not think that the operation of 15a would result in higher transportation charges than would be necessary without it, as the revenues became more evenly distributed through the operation of the recapture clause and through adjustments of divisions. Mr. Hawes then addressed the same question to Mr. Esch, who replied that he agreed with what Mr. Hardie had said, and that while there is probably a wide impression that a repeal would reduce rates that hope would probably be disappointed because the commission would still have to consider the conditions that require the present rates.

Representative Shallenberger has not been particularly successful in obtaining signatures to his motion to discharge the committee from consideration of the Huddleston bill, although he says he has not been making any effort to do so beyond his speech on the subject. On May 24 there were 37 signatures out of a required 150.

An additional appropriation of $350,000 for the valuation work of the Interstate Commerce Commission, intended particularly to enable it to expedite the valuations of railroads whose reports indicate the possibility of excess earnings to be recaptured, was recommended by President Coolidge in transmitting to the House under date of May 20 a supplemental estimate of appropriation for the commission for the fiscal year 1925 in addition to the amount previously recommended in the budget of $647,260. The appropriation for valuation for 1924 was $1,250,000 and the commission has pointed out that the reduction would greatly curtail its work just at the time when the valuations are being required for the purposes of recapture. The commission has made up figures based on the property investment accounts as of 1922, indicating the possibility of

recapturing something like $36,000,000 for 1923, whereas the railroads in making reports on their own basis of valuation are indicating very little excess. The President transmitted with the estimate a letter from the director of the Bureau of the Budget saying in part:

"The expenditure thus far made by the Government for the valuation of property of carriers, upward of $25,000,000, has sufficed to carry the original valuation of steam roads well along toward completion, since the task of inventorying and inspection of the properties—the field work—was substantially ended in 1922; the work of preparation and issuance of the underlying engineering, accounting, and land reports involved will be completed in the summer of 1924; and it is estimated that the preparation and issuance of the tentative valuations will be completed in the succeeding year. This brings the work to the great task of quasi-judicial determination of the primary valuation of steam roads and the bringing of those valuations to date, each being of fundamental importance to the Interstate Commerce Commission for rate-making purposes and for the recapture of excess earnings in accordance with existing law, especially since the Supreme Court of the United States * * * upheld as constitutional the so-called "recapture" paragraphs of the transportation act of 1920.

"The amount appropriated under this heading for 1924 was $1,250,000. The amount recommended in the Budget for the fiscal year 1925 is $647,260. Additional funds are required to enable the Interstate Commerce Commission to recapture excess earnings by steam road carriers, to prepare and present proper rebuttal testimony, and to conduct and prepare reports of hearings granted under the law to carriers protesting the commission's valuations."

The Gooding propaganda resolution was debated in the Senate for an hour or so on May 26, when the Senate voted 41 to 19 to take up its consideration, but the debate had not been concluded when the hour arrived for taking up the unfinished business. Senator Gooding offered an amendment, which was agreed to, allowing the Interstate Commerce Commission seven months in which to make its report to Congress after an investigation, instead of 60 days as originally proposed. Senator Trammell offered an amendment calling for information as to any expenditures directly or indirectly for the publication of a newspaper, saying that the railroads "own a sufficient number of the large dailies or contribute to the expenses or maintenance and support of those papers, to give them quite an influence in the molding of public opinion." The amendment was rejected.

Senator Reed of Pennsylvania objected to the consideration of the resolution, which necessitated the vote to take it up on Senator Gooding's motion. Speeches in favor of the resolution were made by Senators Gooding, Norris, Brookhart, Frazier and Pittman, while it was opposed by Senators Reed and Bursum. Senator Brookhart in supporting it said that he would like to have the investigation made to find out which railroads are contributing to advertising to defeat him in the primary election.

The House committee on May 27 reported as a substitute for the Smith resolution which had been sent over to it by the Senate, the Hoch resolution providing for an investigation by the Interstate Commerce Commission with a view to a readjustment of the entire freight rate structure, with the addition of a paragraph similar to the Smith resolution which provides: "In view of the existing depression in agriculture, a basic industry, the commission is hereby directed to effect with the least practicable delay such reasonable and lawful changes in the rate structure of the country as will promote the freedom of movement by common carriers of products of agriculture affected by that depression, including livestock, at the lowest possible reasonable and lawful rates compatible with the maintenance of an adequate transportation service; Provided, that no investigation or proceeding resulting from the adoption of this resolution shall be permitted to delay the decision of cases now pending before the commission involving rates on products of agriculture and that such cases shall be decided in accordance with this resolution."

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading showed a slight gain during the week ended May 17 as compared with the week before, but the total, 913,407, was still below that for the week of May 3, and was 78,912 cars less than the total for the corresponding week of last year. As compared with 1922 there was an increase of 132,454. Ore showed a considerable increase as compared with the preceding week, but as compared with the corresponding week of last year there were increases only in grain and grain products, and l.c.l. merchandise and in the total for the Southwestern district. Coal loading was 45,969 cars less than for the corresponding week of last year, and there was a decrease of 16,726 cars in miscellaneous loading.

REVENUE FREIGHT CAR LOADING—WEEK ENDED MAY 17, 1924

Districts	1924	1923	1922
Eastern	220,759	249,153	185,774
Allegheny	186,692	222,655	148,462
Pocahontas	37,729	39,657	41,186
Southern	131,223	135,181	124,467
Northwestern	141,257	154,735	113,539
Central Western	133,850	134,740	115,821
Southwestern	61,897	56,198	51,704
Total Western	337,004	345,673	281,064
Commodities			
Grain and grain products	37,311	33,802	42,694
Livestock	30,031	30,707	28,454
Coal	135,650	181,619	81,456
Coke	9,069	15,361	9,309
Forest products	73,997	77,716	61,174
Ore	55,383	67,054	16,631
Mdse. l.c.l.	247,355	244,723	243,353
Miscellaneous	324,611	341,337	297,822
Total	913,407	992,319	780,953
May 10	909,187	974,741	767,094
May 3	914,040	961,617	747,200
April 26	878,892	962,578	751,111
April 19	876,923	958,042	706,137
Cumulative total, January 1 to date	17,823,118	18,009,683	15,059,800

The freight car surplus showed a slight decrease during the week ended May 14 to 319,106, including 167,102 coal cars, 112,648 box cars and 13,462 refrigerator cars.

The Canadian surplus was 18,725 cars, including 15,175 box cars and 500 coal cars.

Car Loading in Canada

Revenue car loadings at stations in Canada during the week ended May 17 showed an increase of 1,023 cars over the previous week, due almost entirely to increases in grain loading in both the Eastern and Western divisions, and increases in pulpwood in the Eastern division. Compared with the corresponding week in 1923, the increase was 3,208 cars, or 6 per cent, and the cumulative totals which have been revised and corrected to date show an increase of 93,633 cars, or 9.8 per cent. Car loadings, by commodities, for three weeks, are as follows:

Commodity—1924	For the week ended May 3. Cars	May 10. Cars	May 17. Cars
Grain and grain products	8,013	8,699	10,551
Live stock	2,181	2,285	2,302
Coal	5,113	3,890	3,580
Coke	267	321	180
Lumber	3,903	3,857	4,037
Pulp wood	1,825	1,835	2,212
Pulp and paper	1,824	2,065	1,999
Other forest products	2,330	2,218	2,073
Ore	1,432	1,172	1,180
Merchandise L.C.L.	15,524	15,778	15,443
Miscellaneous	12,574	13,029	12,715
Total cars loaded	54,986	55,149	56,172
Total cars received from connections	32,473	32,750	32,868
Total cars loaded from corresponding week, 1923	51,582	53,444	52,964
Cumulative loading to date—1924	.....	.....	1,056,090
Cumulative loading to date—1923	.....	.....	962,457

Illinois Central Builds Modern Pumping Station

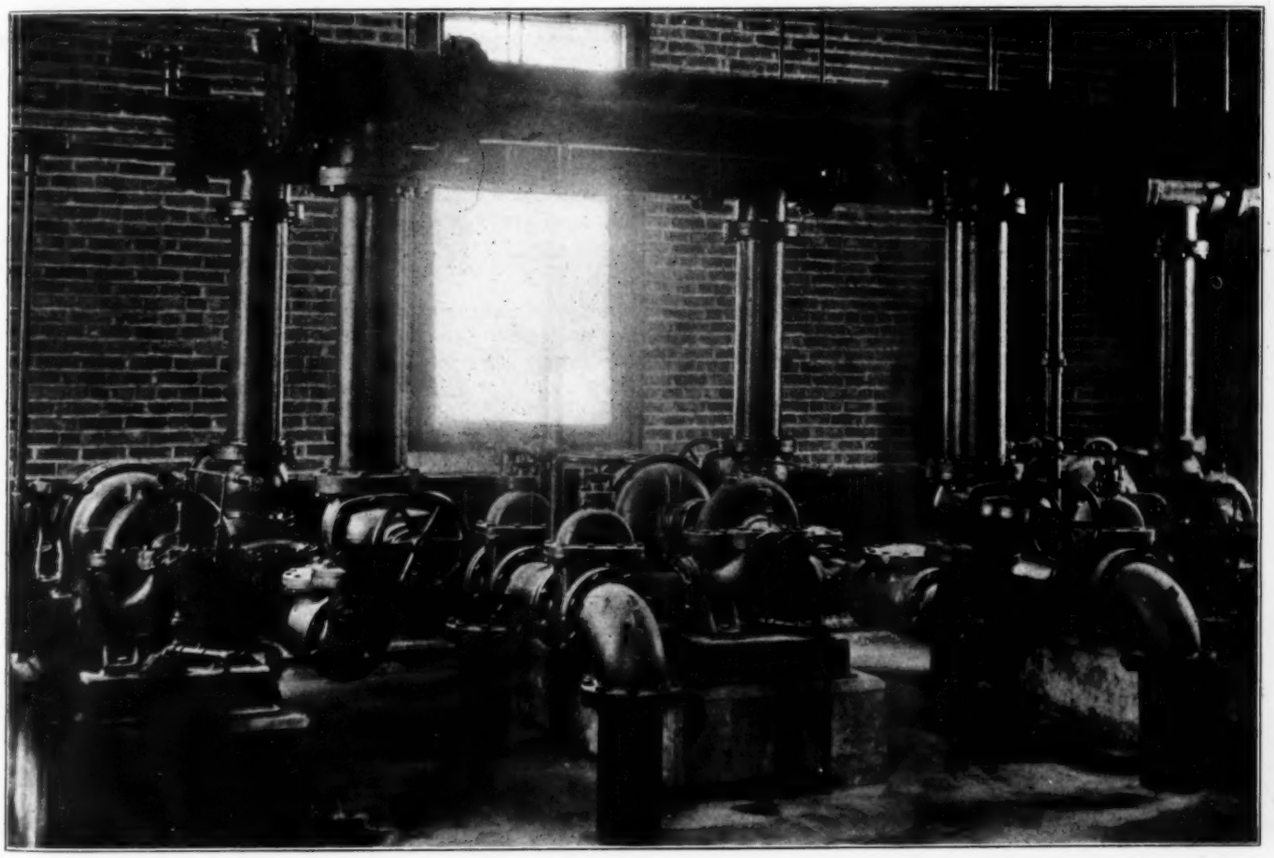
Automatic Electric Control, Softener and Filters Characterize Facilities at Clinton, Ill.

By C. R. Knowles
Superintendent Water Service, Illinois Central

THE Illinois Central has recently completed a complete new water station at Clinton, Ill., which is considered noteworthy for its completeness and particularly for the electrical features involved. The facilities consist of three deep wells equipped with turbine pumps and a 50,000 gal. per hour water softener, all of which are electrically driven, together with filters, pipe lines and an additional storage tank having a capacity of 100,000 gal.

Clinton is located midway between Chicago and St. Louis, the hub of six engine districts. It is also the headquarters of the Springfield division and the site of one of the principal mechanical terminals and locomotive shops on the system. An average of 70 engines are handled through the roundhouse daily in addition to making general repairs to about 180 annually. The daily consumption of water for all purposes is approximately 1,000,000 gal.

The water supply was originally obtained from a reservoir having a capacity of 12,000,000 gal., located in the vicinity of the shops and supplied by surface runoff. This supply was ample for many years, but as the consumption of water increased with the greater volume of business handled the supply from the reservoir became inadequate during the late summer months and in 1900 a pumping station was constructed on a stream about four miles southeast of Clinton and the water pumped to the reservoir through an 8-in. pipe line 20,000 ft. long. These facilities proved adequate until the past few years when the consumption of water continued to increase to such an extent that the shops were threatened with a shortage during the late summer months each year. An abundance of ground water is available at a depth of 340 to 350 ft., and while this water is not of the best quality it offered the only available means of providing an adequate year-round supply.



The Interior of the Station

New Supply from Three 18-in. Wells

Three wells were constructed, each 18-in. in diameter, to a depth of 200 ft. and 10-in. in diameter from 200 ft. to 350 ft. deep. The water-bearing sand stratum is 90 ft. in depth while the length of strainer is 55 ft. The 10-in. casing extends from the top of the screen to a point 20 ft. above the bottom of the 18-in. casing; the seal between the 18 in. and the 10 in. casing being formed with gravel to exclude the sand.

The pumping equipment in the well consists of 5-stage turbine pumps having a 7-in. suction and 9-in. discharge.

Each pump is driven by a vertical 85 hp. 440 volt, 3 phase synchronous motor. The pumps tested out 763 gal. per min. with an electric input of 65 to 70 amp. or about seven-ninths of the rated capacity.

The piping arrangement of the wells is such that they can be pumped either into the reservoir or the softening plant or direct to the storage tank. Each well is equipped with an automatic control panel located in the pump house, these panels having the usual electrical equipment such as starters, overload and no-voltage protection as well as automatic and push button control, the push button control being so arranged that the pumps can be started and stopped from the water softening plant, if desired, thus placing the well pumps at all times directly under the control of the treating plant operator. Under normal operating conditions when pumping to the treating tanks the operation of the well pumps is automatic, the control being through float switches in the roadside tank and in the treating plant clear water wells.

The pump houses over the wells are of brick construction 12 ft. by 14 ft. in size with concrete floor and roof and metal sash and doors. Each house is equipped with a permanent derrick for raising and lowering the droplines and pumps in the well and all discharge lines from the wells are constructed of 10-in. cast iron pipe with long-radius bends and branches to insure the minimum friction loss.

The Water Softening Plant

The water softening plant is a twin tank continuous system of the lime and soda ash type with two conical bottom steel tanks having a capacity of 100,000 gal. each. These tanks are operated in series, one of the tanks being equipped with an 8-ft. downcomer or reaction chamber extending from a point 5 ft. above the tank to within 12 in. of the bottom.

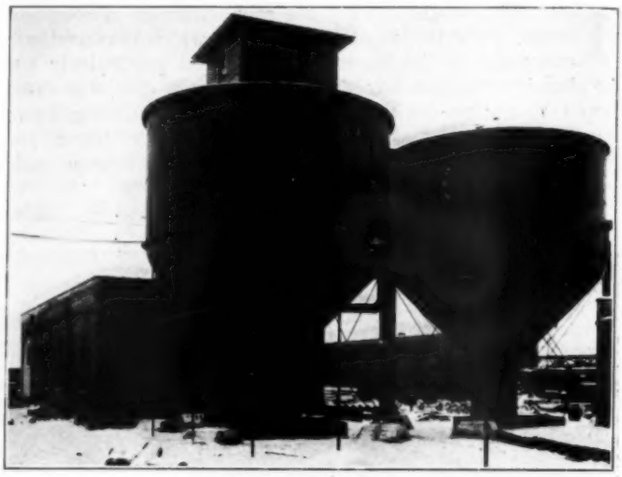
The chemical solution mixing equipment is the Nelson Type K type as described in the *Railway Age, Daily Edition of March 11, 1924, page 601.*

Two Gravity Sand Filters Used

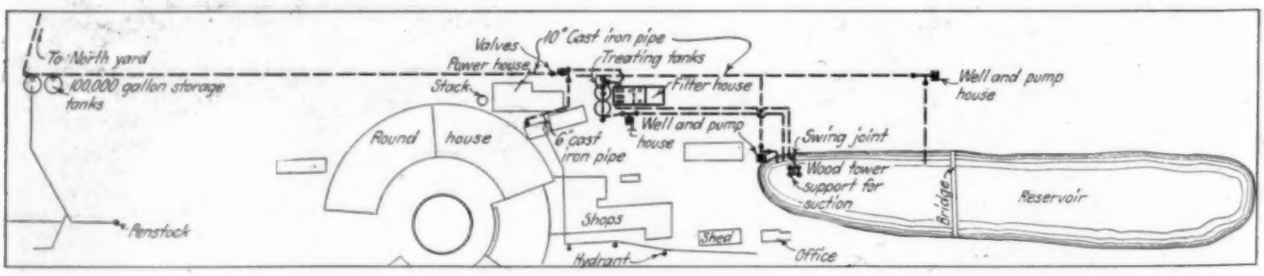
After treatment the water passes through two gravity sand filters to a clear well from which it is pumped to the storage tanks. These filters are standard gravity filters 16 ft. in diameter by 8 ft. high. A manifold is placed in the bottom of each tank with brass strainers uniformly spaced over the entire area of the bottom of the tank. A bed of coarse gravel 6 in. thick is placed directly over the strainers and another layer of finer gravel 8 in. in thickness above the coarse gravel with a top layer of filter sand 24 in. thick above the gravel. The rate of filtration is 2 gal. of water per min. per sq. ft. of filter area. The water is admitted to the filters through a circular distributing trough which effects an even, quiet delivery of water to the filter beds. The delivery of water to the filters is controlled by float valves which prevents overflowing the filter tanks. The filter wash lines are so arranged that the filters can be washed with treated and filtered water.

The chemical storage, pumps, treating plant machinery and filters are housed in a brick building 30 ft. by 80 ft. A room 28 ft. by 30 ft. is provided for chemical storage, the remainder of the building being used for the pumps, chemical machinery and tanks and the filters. A treated water reservoir of reinforced concrete, having a capacity of 40,000 gal. is constructed under the south end of the treating house. The water flows by gravity through filters to this reservoir and is pumped to the storage tank by pumps located immediately above it.

Three rehandling and service pumps are installed in the treating house and so connected that any one or all of the pumps may obtain their supply either from the large reservoir, or from the treated water reservoir, and discharge either into the treatin tanks or into the discharge line to the storage tanks. The pumps are 6-in. single-stage horizontal split-case, enclosed-impeller bronze-fitted centrifugal pumps, each having a capacity of 750 gal. per min. Each pump is direct connected to a 40 hp. synchronous motor operated on 3-phase, 60 cycle, 440 volt current. Each pump is provided with an automatic control panel equipped with remote float and push button control, together with overload, high voltage and no voltage protection.



An Exterior View of the Station



The Layout of the Station

Automatic Control Provides for All Emergencies

The untreated water is obtained from two sources, the deep wells and the reservoir. Under normal operating conditions the water is pumped from either of these sources to the treating tanks from which it flows by gravity through the filters to the clear well under the chemical house. From clear well it is pumped by the rehandling pumps to the roadside storage tanks.

The untreated water supply is controlled by three electric

float switches located in the shop storage tanks and a similar switch in the north yard tank. The north yard float switch is paralleled with the first float switch in the shop storage tank so that when either or all of these tanks have 8 ft. of water removed, the switch will close and start well No. 1. If the water level should fall farther in the shop tank, switches Nos. 2 and 3 will operate wells Nos. 2 and 3.

Owing to the comparatively small amount of water used in the north tank, a single float switch will operate the pumps to supply sufficient water. In an emergency and by means of cross connections in the electrical control and by-pass arrangement in the water mains, it is possible to use one of the horizontal rehandling pumps in the chemical house as an untreated water supply pump.

The control of the rehandling pumps under normal conditions is quite similar in that three float sump switches are located in the clear well, operating at 2, 3½ and 5 ft. When the water in the clear well rises to a height of 2 ft., rehandling pump No. 1 is cut in automatically and supplies treated water to the roadside tanks. Should the height of the water in the clear well continue to rise, pump No. 2 will be cut in and No. 3 if the water should then rise sufficiently to trip the switch at 5 ft.

Provision on the control panel is also made so that it is possible to control any of the three rehandling pumps from any of the sump switches or the storage tank control switches. This is accomplished by means of a large tumbler switch which is located at the bottom of the left hand control panel. A desirable feature of this control is that although the motors are all operated by 440 volt current, the control circuits are only 110 volts, giving an added feature of safety to its operation.

The automatic features of the plant are especially beneficial in reducing the amount of attendance required for keeping the plant in running order. At Clinton the attendants are three in number, two repairmen, who give part time only to the pumping plant, and one treating plant operator. One of these men is in attendance during each eight-hour shift.

Recording Gages Included

In addition to the control panels a marble gage board of the same size and design as the control panels has been installed. This board is equipped with two combination indicating and recording gages suitable for working pressure up to 100 lbs.; two 30-in. vacuum gages for showing suction lift; two combination pressure altitude gages suitable for pressure of 100 lb. or 230 ft. and an eight-day clock. One vacuum gage is piped to the clear well suction of the pumps in order to give the vacuum indication for any or all of the pumps when they are pumping from the clear well. The other vacuum gage is piped to the reservoir suction in such manner as to give vacuum indication for any or all of the pumps when pumping from reservoir. One combination indicating and recording gage and pressure and altitude gage is piped to the 10-in. header supplying the roadside tanks. Thus it is possible to check the performance of the pumps at all times, the recording gages furnishing a permanent record of the time pumps are operated as well as a record of the pressures maintained.

Plant Has 300,000 Gal. Storage

The existing storage tanks at Clinton consisted of two A.R.E.A. standard 100,000 gal. wooden tanks constructed of creosoted material, one tank being located at the shops and serving the engines entering and leaving the roundhouse, while the second tank was located at the north yard, serving freight engines entering and leaving the yard as well as the Amboy district. Since 75 per cent of the water is used at the shops, an additional storage tank with a capacity of 100,000 gal. was constructed immediately adjacent to the shop tank. These two tanks in addition to the tank in the north yard, which is of the same size and design as the other two, provide a total storage capacity of 300,000 gal. or sufficient water to supply the shops and other facilities for a period of about eight hours without pumping. While this is not an exceptionally large storage for a consumption of a million gallons per day, the pumping facilities are provided with standby units, and there is little, if any, likelihood of failure of the water supply.

The treating plant house, with the exception of the chemical storage room, is heated by steam from the stationary boiler plant at the shops, full radiation being provided for maintaining a temperature in the treating house of 70 deg. with a steam pressure of 2 to 5 lb. per sq. in. Radiation is also provided in the headhouse over the treating tank.

The work was undertaken under the general supervision of F. L. Thompson, chief engineer of the Illinois Central, with Joseph E. Nelson & Sons, Chicago, handling the general contract for the water softeners, pipe lines, pumps and storage tanks, the Chicago Bridge & Iron Works, Chicago, constructing the steel tanks and the Sickel Water Production Company, Aurora, Ill., developing the wells.

Distribution and Mailing of Outgoing Freight Waybills

THE "VERI-DIRECT" method of moving package freight from the shipper's dray to the outgoing car (including the checking of shipping orders and the checking and forwarding of waybills) which was described by C. G. Johnson in the *Railway Age* of December 2, 1922, page 1053, is a successful scheme for insuring accuracy in loading and billing which, at large stations, has given constantly satisfactory results. A station sending out 1,000 consignments a day secures this accuracy (forestalling many claims for loss, as compared with less thorough methods) for an average cost of about 1 cent per shipment. One of the essential features of this plan is the machinery for sending out the waybills with all necessary promptness and accuracy; and Mr. Johnson, at the Editor's request, has given the *Railway Age* the following discussion of this point:

Some Recent Observations

The importance of the accurate distribution and mailing of waybills for l.c.l. freight is acknowledged by every clear-headed freight man, but it is astonishing to find all over the country, in large, medium and small-sized stations inadequate facilities for this work. The Freight Claim Division of the American Railway Association lays particular stress upon loss and damage claims caused by the waybill not accompanying the freight. If the waybill does not accompany the shipment, theft is facilitated, the reasoning of the thieves being that if the waybill is not with the shipment the record of it is lost; and that it can be stolen with less fear of detection.

There is no good reason for this very unsatisfactory condition. An investigation made some time ago of the conditions at several large stations in the larger cities developed that these facilities were entirely inadequate. At one large station where an average of 50 cars of merchandise were loaded daily, a case having only 30 compartments was used, and the waybills for the most important cars were distributed according to the car numbers and initials. These car numbers and initials were written on slips of paper and one slip was pasted at the top of each compartment. This, notwithstanding the fact that this station was furnished with a regular loading schedule or layout sheet with permanent symbol or flag numbers printed thereon, these numbers repre-

senting the car numbers and initials of every car loaded. For example, the Boston car was No. 23, and this symbol or flag number, 23, represented the Boston car *all of the time* regardless of the number of the car or its track location.

At another station in the same large city where there are more than 150 cars loaded daily, the same methods of distribution were employed. This station was equipped with a distribution case with more than 100 compartments, but instead of numbering the compartments and distributing the waybills according to the compartment number (which would, of course, be the same as the symbol or flag number tacked on the car), the waybills were distributed according to the car numbers and initials themselves. With great labor these numbers were pasted on the compartments day after day. Here also a standard layout sheet was provided. At one large station a table was used for distribution purposes; and at another a counter; and of the several stations visited, only two or three had adequate facilities for the handling of waybills.

Successful Arrangements on the Erie

On the Ohio region of the Erie Railroad we have, we believe, adequate distribution cases at our large and medium-sized stations, and the proper supervision is exercised in this important work. Cases are furnished of 100 or more compartments, according to requirements. The majority contain 100 and are made 10 compartments wide and 10 high, with small receptacles within the main compartments for the placing of veri-check ballots; this to facilitate checking against the waybills. These receptacles are made of wood, and are placed in the upper section of the main compartment. The main compartments are numbered according to the symbol or flag number of the car, which in all cases commences with "1." Brass receptacles are provided on each side of the main compartments for the insertion of the card bearing the flag or symbol number of the cars. When a change is necessary on account of extra cars 500 is added to the first extra car, 600 to the second, and 700 to the third car, etc. For example, in the case of car No. 1, the first extra car loaded is 501, the second 601, the third 701, etc. The arrangement of the numbering of the compartments facilitates the rapid location of any compartment, the case being 10 compartments high and 10 wide. All of the No. 1's are found in one perpendicular section, all No. 2's in another, all No. 3's in another, etc. All waybills are distributed according to the flag or symbol number of the car, which is shown on the waybill. If the waybill is a passing one, that is, if it is for freight transferred at the station or moving to a connecting line on a through waybill, the symbol or flag number is shown on the waybill in the space provided for the impression of the transfer stamp. If the waybills are made at the station, the flag or symbol number is put on by the typist.

The Waybill Invoice

A waybill invoice is prepared by the use of combination invoice and veri-check record for every car, which shows the date of loading of the car and its destination; the car number and initials, the waybill and the date, the destination of the shipment, the weight, the veri-check progressive number, and the number of pieces of freight shown on the waybill.

The veri-check ballots covering the freight that is loaded into the cars are checked against the sheets in the freight house foreman's office for verification of the loading. When this verification is completed, the veri-check ballots are sent to the waybill distribution desk and rechecked against the combination waybill invoice and veri-check record to see that there is no error in waybilling or any failure to put the waybill in the right box. The progressive number shown on the veri-check ballot is, of course, shown on the waybill and the waybill invoice, and this number is used in making the check. If the waybill invoice shows that a waybill bearing a certain number has nine pieces, and veri-check ballots are received for 10, an error is immediately detected, and a correction made. If the shipment has originated at the station, the shipping order is examined, and if the error is found in waybilling, which is ordinarily the case, the waybill is corrected.

The Final Checks

After all of the veri-check ballots have been checked against the invoices of the waybills, covering the cars on the layout sheet, the waybills in every compartment are checked to ascertain if all in that compartment bear the same flag or symbol number, and if that number agrees with the number on the compartment. If any of the waybills should be found bearing another flag or symbol number, investigation is made and error corrected. If every waybill bears the same number as its compartment, then the loading schedule is inspected for the correct car number and the waybills are again inspected in every compartment to ascertain if the right car number and no other appears thereon. As a final proof of the correctness of the distribution, the number of waybills is counted and compared with the number of entries on the waybill invoice. If the number of waybills agrees with the number of entries, the waybills are accurately distributed beyond the question of any doubt.

The freight house foreman furnishes, as early as possible, information showing the cars that will be set back and held over for the next day's loading. A rubber stamp is impressed on the layout sheet showing the set back cars. The waybills covering the cars that are ready to move, together with a copy of the non-revenue waybill, are bradded to the original waybill invoice (which is a part of the combination waybill invoice and veri-check record, showing only the waybill number and date, destination, and weight of the shipments), and are enclosed in the envelopes, which have been previously made, for all cars that are ready to move. A copy of the non-revenue waybill (which goes with the car) accompanies all waybills mailed, in order that the destination agent may know, when the waybills are received by him, that the car has been properly waybilled to his station.

Before the envelopes containing the waybills are allowed to leave the distribution desk, the compartments containing the waybills for the set back cars are checked against the loading schedule to see that there are no waybills left in the compartments except those for set back cars.

Waybills for way cars are attached to the non-revenue waybill instead of being mailed.

Under no circumstances is a waybill allowed to leave its compartment, before mailing, except for checking purposes at the distribution desk.

Waybills covering freight transferred or moved to a connecting line on through waybills are sent direct from the freight house to the typist for transcribing on the passing record.

If the distribution and mailing of waybills is surrounded by the safeguards here explained, there will be no doubt about the correctness of the mailing; and when all waybills are properly mailed it will be found that the loss and damage account of American railroads will be materially reduced. Furthermore, a very considerable amount of labor at stations and transfers will be eliminated.

W. J. BLACK, head of the department of colonization of the Canadian National, has announced in London, England, arrangements for a new testing and training scheme for would-be British emigrants to Canada. Under this plan they would be given preliminary instructions in Great Britain, followed by carefully directed contact with actual farming conditions on arrival in Canada. Mr. Black is going to Scandinavia soon to explore that field for emigration to Canada.

Spring Switches Reduce Delays on Santa Fe

Installations at Ends of Passing Tracks and Yard Outlets Under Signal Protection Prevent Train Stops

By D. K. Crawford
General Signal Inspector, Atchison, Topeka & Santa Fe, Western Lines, La Junta, Colo.

BY THE USE of spring switches at the ends of passing tracks and at outlets of yards, the Atchison, Topeka & Santa Fe, Western Lines, have effected substantial savings in train operation and have eliminated the necessity of switchmen or small interlockers at several points. This type of spring switch, which was developed on the Santa Fe, is installed only where the speed in the direction of the facing point is restricted by rule or by grade, and only where automatic signal protection is available or readily provided. Four years' experience with this device has justified further installations.

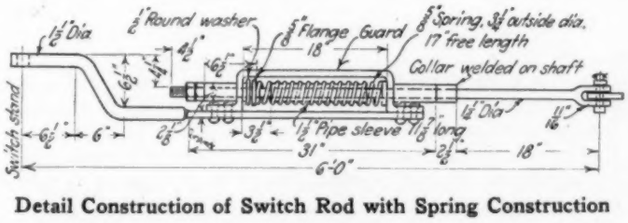
Fig. 1.—Typical Installation of Spring Switch and Buffer

Typical Layouts and Savings Produced

At Burrton, Kan., the switch at the west end of the double track, as shown in Fig. 2, is equipped with the spring device. Unless switchmen or an interlocking were provided, it would be necessary for a train to make two stops to operate this switch in passing out. A view of this switch is shown in Fig. 1. As the end of second track at this location is only temporary for a year or so, it was not advisable to install an interlocking plant. Trains pass from automatic to manual block territory at this point and are required to reduce speed for both facing point and trailing moves. By installing this switch and a signal, a switch tender was eliminated.

At Dodge City, Kan., the outbound freight lead from the yard, which is on a heavy grade, is connected to the eastbound main with a spring switch. This layout, as shown in Fig. 3, eliminates the stopping of tonnage trains to operate the switch. Previously it was necessary to use a helper engine on outbound freight trains as they could not start on the grade after stopping to throw this switch, but since the installation of the spring switch the helper service has been dispensed with. At this location one back-up dwarf signal was required to protect train movements against the current of traffic in case of emergency and this signal increased the cost of the installation slightly.

Another of these spring switches was recently installed at the end of a passing track at Fox, N. M., as shown in Fig. 4. In this layout the cross-overs at the end of the second track near the station are operated and protected by an interlocking, but delays were caused to trains leaving the passing track on account of their being required to stop to close the switch. The installation of the spring switch has eliminated these delays and resulted in a greater use of the passing track than heretofore. Also in case of emergency the end of second track can be extended to the end of the passing track.



Detail Construction of Switch Rod with Spring Construction

The oldest installation of this design of spring switch has been in service at Hutchinson, Kan., for four years. In this layout, shown in Fig. 5, each end of a cross-over is

equipped with a spring switch. The installation of these two spring switches has eliminated the services of switch tenders for three tricks, saving from $450 to $500 a month.

This type of spring switch consists of two essential parts, *i.e.*, a special throw rod equipped with a strong spring against which the switch is closed, and an oil buffer to slow up the action of the spring on the return movement. A car wheel, in passing through the switch, forces the points open, and since each pair of wheels act on the switch, the oil buffer is employed to eliminate unnecessary hammering.

The switch points and the switch circuit controller of the

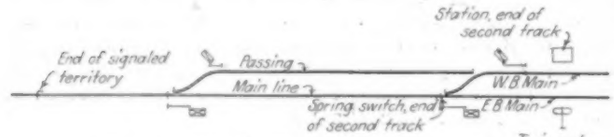


FIG. 2 LAYOUT AT BURRTON, KAN.

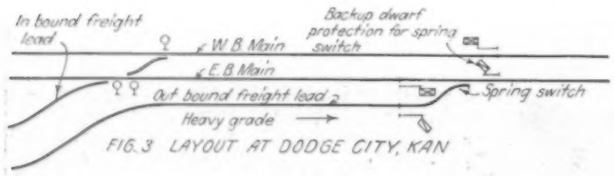


FIG. 3 LAYOUT AT DODGE CITY, KAN

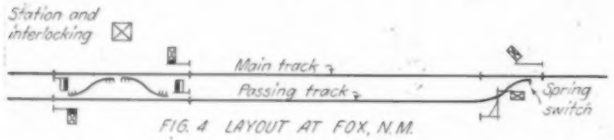


FIG. 4 LAYOUT AT FOX, N.M.

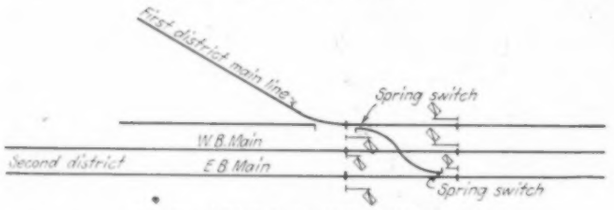


FIG. 5 LAYOUT AT HUTCHINSON, KAN

Typical Track Layouts Where Spring Switches Reduce Delays

signal system receive two distinct movements for each car that trails through, which means 20 to 25 movements for each passenger train and from 50 to 150 for each freight train. Even under these conditions it has been found that the average life of the switch points, under heavy traffic, if between six months and a year. It was anticipated that the life of a switch circuit controller subjected to this service would be short but on two of these installations in yards which are subjected to severe use, both by through trains and switching, the switch circuit controllers are still in first class condition after four years' service.

IN THE DAYS succeeding the Centaur, when horses, mules and asses were used as the propelling power of vehicles to transport humans, gates were used to stop travelers on the highways when a railroad train approached. The horses, mules and asses, seeing the gate across the road, stopped, and let the train go by in safety to themselves.

In the progress of mankind motor vehicles were produced, and then the ass, instead of drawing the buggy, climbed into the front seat and became the driver of the flivver. Since that time he has usually been unable to see a gate at a railroad crossing, and if he did occasionally glimpse it, it was his delight to run it down in trying to beat the train across the track. Moral:—Keep the ass in his place.—*Daily Journal Press*, St. Cloud, Minn.

Fire!

THE EASTERN SECTION of the Railway Fire Protection Association, at a recent meeting in New York city discussed various bits of experience which are instructive to men in the operating and other departments, and certain extracts from the proceedings of the meeting will be found of interest.

Tie Storage Yards.—Inquiry as to loss experience developed three large fires known to those present, $16,000; $20,000 and $75,000. Maintenance of a clean yard is of fundamental importance, especially around boring and adzing. Elimination of vegetation is very desirable and can be taken care of easily and economically by a surface of 8 in. to 10 in. cinders. Piling of ties should be definitely planned and regulated as to height, intervals, etc. Special nozzles to throw a flat stream into piles are provided in some yards.

Acetylene Torches.—Special attention by watchman should be definitely arranged. One road gives watchman a list of all cars at shop on which torch was used during latter part of day. Intense heat tends to set woodwork smouldering to break out long after. ***The heat wave goes well beyond the visible flame.*** The colorless portion of the flame is the hottest. Contents of car should be ascertained, to see if lading is of a kind easily ignited, such as cotton. Education of car repair employees and good supervision of this hazard is essential.

Gasoline Handling Tracks.—Two large roads have ruled that no unloading of gasoline shall be done on house or public delivery tracks. Objection to such rule may often be made by traffic departments but the control of hazards around such features is important. Gasoline handling should be confined to private sidings. Applications for location of unloading facilities should always be referred to the Fire Prevention Department. On some roads an inspector of the Bureau of Explosives is also consulted; he can give helpful re-enforcement to recommendations. Casinghead gasoline is being noted more frequently in the Northeast. B. E. 2084 applies. Unloading of casinghead near main line is very dangerous. Sidetrack contracts should make reference to handling of dangerous articles; also protect against stray electric currents on oil tracks—voltmeter tests show the desirability of proper bonding and other precautions. Interesting illustrations of above features were related.

Lanterns.—Carbide lanterns involve danger in disposal of refuse. Care should be exercised in disposing of residue especially as unexhausted carbide nuggets are likely to be thrown out and come in contact with moisture near combustible material. These lanterns are still in the experimental stage. It is agreed that the electric lantern is most desirable but the expense is still prohibitive in many cases. Rechargeable batteries are now used in wrecking outfit lights on one large road. These will run ten or twelve hours. Voltage can be tested readily. Especially valuable for use around tank cars.

Smoking.—Two of the largest shops prohibit smoking on the premises. One seaboard terminal has forbidden smoking, notified shipping interests, stevedores, etc., and posted special officers to eject or arrest as trespassers any person found smoking.

One road has had three truck drivers arrested for smoking on piers and they were fined $5 each. Results are very noticeable and gratifying. This followed eight fires in two weeks on piers, ferries, etc. Another road has had two recent arrests for smoking. One line follows the smoking regulations as promulgated by the Railroad Administration and is enforcing them, threatening dismissal.

It is generally acknowledged that great difficulty is found with offices and officers. Offices should not be an exception to the rule and officers should co-operate.

Railway Claim Agents Hold Annual Convention

Handling of Personal Injury Claims Considered from Several Angles

THE Association of Railway Claim Agents held its thirty-fifth annual convention at the West Baden hotel, West Baden, Ind., on May 21, 22 and 23, with 200 members present. After calling the convention to order, Willis H. Failing, claims attorney of the Central of New Jersey and president of the association, reviewed the work of the association during the past year. He also suggested that the date for the annual meetings be changed to July as May is a busy court month and members find difficulty in attending the meetings until after the courts have adjourned in June.

Address by L. W. Baldwin

The meeting was addressed by L. W. Baldwin, president of the Missouri Pacific, who spoke in part as follows:

"I believe that every claim that arises as a result of a personal injury should be fully investigated by the division staff and the division claim agent should have the help and backing of the superintendent, the master mechanic, the division engineer, the trainmaster, and other local officials who should make a personal investigation to ascertain all of the facts in connection with the accident and to find out if the contributing causes could have been removed. Frequently it is possible as a result of such investigations to prevent similar reoccurrences. Nearly all claims arising from personal injury and death could be prevented and it is often possible to devise ways and means for preventing them, especially when the definite causes have been located.

"Railroad men should not permit themselves to get into a frame of mind where they believe it is the duty of the claim agent to make the investigation and the settlement, and close the case after an accident has occurred. You men should seek all of the assistance and co-operation that you can from division officials in the handling of your work. In my opinion the work of the railroad claim agent is one of the most important phases of the railroad business. It is a work that every railroad man should be more familiar with to the end that the causes and expense of claims be reduced to a minimum.

"The successful development of almost every line of work depends upon a carefully planned and well executed program of education. The most fertile field for work of that kind today is to be found in the ranks of railroad workers. Through them and with their assistance a greater educational work can be extended to the general public. A better understanding of the problems involved, the reasons for the development of these problems, and the methods of prevention and cure, are some of the things most needed.

"It is incumbent upon the managements and all railroad officers to study every operation on the railroads, to insure every possible protection being put around such operations or work and to reduce the possibility of accident hazard. An educational program along these lines among all railroad people will result in satisfactory progress."

The Education of the New Claim Agent

W. J. Holden, district claim agent of the New York Central, spoke on "The education of the new claim agent in the legal elements of claim work, suggesting courses to follow in the instruction and guidance of new men entering the field and ways of improving those already in the field." An abstract of his paper follows:

"The induction of the new man into claim work carries with it a problem of no mean importance. Ordinarily, the beginner, unless he comes from the field of law, has a limited conception of claim work. New material is usually gleaned from other branches of railroad service. It is from this new material that the 'future greats' of claim work must be developed. Their education must be gradual and patient and the teacher must be qualified, temperamentally and otherwise, for his task.

"In considering the prospective claim agent, the New York Central has certain educational and physical requisites. For example, we endeavor to obtain men who have at least had a high school education, or its equivalent. The majority of our claim agents have acquired their legal education in the course of their claim work. After preliminary instruction in the book of rules of the Claim Department, the uses and purposes of the various forms, some elemental investigation and field work under the tutelage of a more experienced man, we consider the new man prepared for his rudimentary legal education. He should then learn the simpler rules of evidence, so that he may differentiate between original evidence and hearsay or secondary evidence; he should learn the meaning of negligence, contributory negligence, assumption of risk, imputed negligence, and similar, basic propositions of everyday application in claim work. Further it is advisable to guard the new man against forming the habit in taking statements, more particularly stenographic statements, of asking in other than introductory matters, questions which are leading. In districts where the force is sufficient to warrant, it is our practice to hold periodic meetings at which, among other things, mooted questions of negligence are discussed, occasional papers on elemental phases of negligence law are read, and questionnaires involving the application of negligence law, knowledge of the statutes and kindred topics, are answered by the claim agents. Considerable value is obtained by assigning for debate an actual case occurring on the district. Debates of this character develop the introspection of the new man and prevent him from becoming unduly biased in his opinions on liability.

"Occasionally, we have an impromptu talk, couched in simple terms, by a member of the legal department, a local attorney, or the claims attorney, on some phase of negligence law. A brief talk outlining the progress of a lawsuit from the filling of a praecipe for summons to the final adjudication is also of value. Consideration might also be given by the larger claim departments to sending all new claim agents to some qualified member of the department for a course of instruction, to include not only the basic methods of the department but also a rudimentary legal education.

"To the new man desirous of increasing his store of legal knowledge it is recommended that he read the negligence cases in the various law reporters, both state and federal, for his section of the country. It is further recommended that the claim agent provide himself with both a legal and medical dictionary.

"So much of the claim agent's work arises from the relationship of master and servant and classification in and out of interstate commerce that the new man should become cognizant of leading cases on these subjects. Likewise, the new man will find a copy of the various federal acts of value. They may be obtained at small cost from the Government Printing Office at Washington, D. C.

"Perhaps there is no better way to visualize the education of the new man than to permit him to follow the litigation of his investigated case through the trial court. Permit him to sit at the trial table with the local attorney. Certain legal words and phrases constantly confront the new man and in due course he should learn them and their proper use. As he progresses in his work he should be encouraged to submit with his reported case a letter of transmission expressing his views as to the legal liability, giving his reasons therefor, and making a recommendation as to the ultimate disposition of the case. When given for investigation a case which may involve a legal proposition novel to the new man, he should not be required to grope in the dark. He should have pointed out to him the things peculiar to the case and the particular legal propositions that may ultimately be involved. Where there is a controlling decision in point he should be apprised of it and, if possible, afforded the opportunity to read the decision before stating his investigation."

Workmen's Compensation Laws

O. G. Browne, claims attorney of the New York Central, read a paper on "Some injustices in the administration of compensation laws" in which he criticised the political maladministration of compensation laws and urged the employment of a higher class of men for administration where compensation laws exist. Following his address a motion was passed that a workmen's compensation committee be appointed to prepare a report of the situation for consideration at the next meeting. His paper in part is as follows:

"We now have compensation laws in one form or another in all the states of the Union except six, namely, North and South Carolina, Missouri, Arkansas, Mississippi and Florida, and in all

of the territories except the District of Columbia. Briefly, the principle urged as justifying workmen's compensation is that the trade must bear the burden of its losses and, as applied to injuries to the person sustained without fault, it was resisted as uneconomic but we must now regard it as soundly established. It naturally followed that the justness of permitting the expense to be charged as a part of the cost of the product would be so recognized that in the final distribution of the burden, the people pay all the cost thereof. It was never contemplated that industry should care for anything but the losses its operations caused.

"Most of the acts provide that compensation shall be for personal injury arising out of and in the course of the employment although in some of them the coverage is broadened to injuries occurring in the course of the employment. Practically all the courts have rather liberally interpreted not only these clauses, but the entire act, so that today we have generally not only a liberal coverage of the field but a very liberal interpretation of the meaning of the words 'accidental injuries.' We know from familiarity with the routine of life that momentarily men must step away from the work bench, clerks must go away from their desks and recreation and rest periods are common in industry, therefore it would appear that the decision correctly applied the underlying principles.

"There are innumerable illustrations possible to show the tendency of charging industry with the ills of workmen wherever or however sustained. The compensation principle never contemplated that protection be afforded except for the casualties of industrial operation. There is no more warrant for protecting a workman outside of the plant of the employer from hazards common to all than that protection be afforded you and me from the time we leave our doorstep in the morning until we reach it in the evening. Compensation is now regularly awarded for injuries and deaths from lightning, sunstroke, extremes of heat and cold, inhalations of gas and deleterious substances even when cumulative, drowning during recreation periods, injuries from baseball in some instances, and for numerous other unrelated causes on the theory that they are hazards of the employment.

"We have strange twists of the imagination in medical results. Here again is industry bearing a heavy burden contrary to principle because human sympathy overrides all principle. Under compensation laws and schedules there is no compromise. Except in one or two jurisdictions, there is no option to deviate from the fixed schedule. The award must be for the full amount provided or there must be no award. Therefore administrators generally have gone beyond anything heretofore contemplated to satisfy the craving for award and irrespective of prior ailments, or physical conditions.

"Liberal interpretations have been brought about largely by the unconventional manner in which these laws are administered. Lay minds with no experience in the field of accident, injury or law have been drafted through our political system to sit in judgment on matters involving thousands of dollars which, before compensation acts, were determined by trained judges aided by a jury of twelve men tried and true. In court, evidence is weighed and unless it is sufficient for reasonable minded men to base a finding of fact upon, the case goes out. But in compensation cases, usually the scintilla rule prevails. All findings are sustained if there is any evidence whatever in the record on which to rest them. Presumptions and conclusions legally worthless but in compensation cases valuable, are used to sustain awards worth $20,000 or more. These political appointees, being human, are susceptible to friendly and political influence and very generally instead of acting in the capacity of a judge alone they are prosecutors of the claimant's case as well. In a compensation controversy you generally start with the presumption that you are guilty and you cannot prove your innocence unless you can prove beyond any possible question that the claimant is trying to sell you something he did not have.

"Whenever you approach a legislative leader with a suggestion that a certain proposed amendment will greatly add to the cost of the law you are met with the retort that you must bring a better argument than that for no one pays any attention to that any more. Yet these are the representatives of the people elected to serve them and protect their interests and it is the people who pay these costs. The pressure of the organized labor lobby in our legislative halls is such that the interests of the people are largely secondary. Threats, intimidation, etc., are effective and constantly are the burdens added. Increased schedules, more informality in the proof required, more liberal medical care, and special benefits tacked on have arrived or are coming.

"The latest thing in New York, aside from a very liberal increase in some parts of the schedule, is a provision requiring an employer to pay double compensation in cases where the injured person happens to be employed in violation of one of the provisions of the labor law, and it makes no difference either that the employer is innocent in the violation or that he may also be subjected to the penal provisions of the law. A similar provision has been adopted in some other states. All these things paint a rather gloomy picture of the situation but to my mind they are bearable compared to what would occur where control and operation of these laws was entirely political as they would be if we had monopolistic state funds."

Compromise Settlements in Crossing Accidents

W. H. Mooney, claim agent of the Missouri Pacific, spoke on the subject "Should or should not the railway companies stand suit in all non-liability crossing auto cases rather than make compromised settlements." An abstract of his paper follows:

"If it were required of me to lay down a set rule for the railroads to follow, I would unqualifiedly say, stand suit in all non-liability auto crossing cases rather than compromise, (1) because there is no moral obligation, (2) as a matter of principle, (3) to discourage criminally reckless driving and (4) in an attempt to reduce the income of over-zealous snitch lawyers.

"The aim of the railroads should be to do that thing which will reduce the number of grade crossing accidents to a minimum. The positive refusal of a railroad company to reward the negligence of an auto driver by a donation of any kind should, undoubtedly, when that fact or attitude became well known, have a tendency to cause more careful driving, but the argument that if the railroads pay for everything people will become more careless is, in my judgment, a poor one. People do not consciously incur the risk of being killed for the amount of money usually paid in a grade crossing accident. In my opinion if it is known that railroad companies compromise or pay something in all cases it will rather have the effect to encourage lawyers to run to them with all such cases to get what they may.

"It would be impractical to have a set rule to apply in all cases, indiscriminately. The business of a railroad company should be handled in so far as possible in the same manner and along the same lines as that of an individual. Railroads have taken greater precautionary measures to guard against auto crossing accidents than have all other individuals or corporations. This is especially true since the advent of the automobile and the paved highway. Yet notwithstanding these precautions, practices and warnings, auto drivers rush on to destruction, imperiling not only their own lives but those of employees and passengers. To compromise with one of these speed maniacs would not, in all probability, prevent the next smart alec from attempting to 'beat 'em across.' Now, after taking these precautions, after going to this expense, after laboring with instructions to their employees along the lines of safety, after putting in time, labor and money for the sole purpose of protecting the auto driver, then of what benefit if the railroads are to compromise or settle. If this additional expense is to be borne by them, then why the first expense for prevention, when, in the face of it all and in direct violation of what an ordinary, prudent and thoughtful man should do, drivers rush on 'Where angels fear to tread.' Should railroads pay because the driver did not see or heed the warnings placed there for his benefit and, meeting the train, get the customary 'second place'; should railroads be assessed a penalty when they have, in the first place, penalized themselves in expenditures to prevent that which just took place?

"It is true the temptation to settle for a nominal sum is great in instances where the damage has been large. It is also true that cases which from investigation appear to be non-liability cases are, frequently, by the aid and ingenuity of lawyers, reputable and disreputable, distorted in the minds of the jury into liability cases. Of course, the opinion of the claim agent and the company attorney who examines the record is fallible. It is impossible to state in advance what a jury will determine upon the facts, except that it is safe to say they will not favor the railroads. Juries are composed of automobile riders and drivers and not railroad owners. So while on principle all such cases should be contested, yet it would not be policy to follow that rule blindly. The question could be the more easily determined if the line between liability and non-liability cases was clearly indicated on the record or disclosed by the investigation.

"As to the financial results of a policy of railroads refusing to compromise cases where non-liability is indicated, I am of the opinion that such a policy would cost more than one of settlements for small amounts. Another thought in favor of compromise settlements: the more lawsuits the railroads can avoid the greater investment in public toleration or approval. The more friction they avoid, the less ignorant and malicious advertising they get.

"My conclusion is that as a matter of principle and a lack of moral obligation these cases should be contested and I feel that is the desire of us all. But, purely as a matter of policy they should be settled, notwithstanding your conviction of non-liability, rather than have the advertising, the friction, the expense and annoyance of litigation, with another fetter riveted upon us by the solemn decision of an unfriendly court."

The Law of Subrogation

Smith R. Brittingham, solicitor of the Seaboard Air Line, spoke on "The Law of Subrogation, Its Use, Abuse and

Circumvention." He defined subrogation as "a substitution of one for another as a creditor, the new creditor succeeding to the former's rights against the debtor in relation to the debt." Thus, where property has been destroyed by fire under such circumstances as to create liability on a railroad therefor, and an insurer pays the loss to the owner, the insurer is entitled under the common law, and in some states by statute, to recoup its loss by way of subrogation against the railroad. But if the railroad first pays the loss to the property owner and thereafter the insurer voluntarily pays the amount demanded under the policy, no recovery can be had by the insurer against the railroad.

"In paying a loss under a policy issued by it the insurance company is not an innocent victim. It is in the business of assuming risks for a money consideration. Its premiums are fixed so as to pay losses and yet earn dividends. By the operation of the subrogation rule the insurance company is permitted to both eat its cake and still have it—a phenomenon rarely encountered in the business world. In the second place, and more vitally, the rule of liability as between railroad and property owner was never designed to apply except to the person who owned the destroyed or damaged property, whether by fire, collision or otherwise. If the laws relating to the railroad's liability in case of fires, grade crossing accidents, etc., were being for the first time devised to deal solely with the subrogation claims, there is hardly any probability that they would be as stringently anti-railroad as those now governing liability to the persons primarily damaged. And there is no other possible conclusion under the law as it now stands in most states, that under the guise of the so-called benevolent doctrine of subrogation rank injustice is being suffered by the railroads. My suggestion, therefore, would be to further the passage of general laws in the several states limiting recovery in the classes of cases here discussed to the actual property damage suffered by the owner or mortgagee, less such insurance as he may have received pursuant to a policy covering the loss. The owner would thus receive full reimbursements; the insurance company would already have avoided loss as the result of its fixed premium rate; and the railroad would be fulfilling its whole legitimate obligation."

Other Papers

C. C. Gleiner, district claim agent of the New York Central, spoke on "The extent to which company surgeons can and should be a factor in settlements. How much freedom should there be in discussing claimant's condition? What should be avoided?" H. W. Colson, general claim agent of the Atlanta, Birmingham & Atlantic, spoke on "What can be done in large cities to overcome adverse public sentiment as reflected by the verdicts of jurors," dealing with jury service and emphasizing the necessity of claim men making acquaintances and keeping them. Harry Allard, district claim agent of the St. Louis-San Francisco, read a paper on "The Written Statement." E. W. Sprague, assistant general claim agent of the Illinois Central, read a paper on "What dividends does this association pay?" E. M. Mann spoke on "The Proper Method and Technique of Using a shorthand reporter in taking a statement from an injured person or others." Dr. E. V. Milholland, medical and surgical director of the Baltimore & Ohio, spoke on "Developing the extent of physical injury." Robert Irwin, general claim agent of the Atchison, Topeka & Santa Fe, Coast lines, read a paper on "The value of courtesy and necessity for gaining the confidence and good will of those with whom we come in contact."

Others addressing the meeting were: R. R. Gallagher, district claim agent of the Central of New Jersey; W. F. Every, general claim agent of the Northern Pacific; J. A. Connell, attorney for the Chicago, Burlington & Quincy; T. T. Bollow, district adjuster of the Chicago, Milwaukee & St. Paul; F. R. Haney, general claim adjuster of the Canadian Pacific; A. P. Donadio, claim attorney of the Cincinnati, Indianapolis & Western; H. C. White, division claim attorney of the Illinois Traction System, and Gelmar Kuiper, general claim agent of the Chicago Great Western.

Alumina Cement Now Manufactured in This Country

USERS OF CONCRETE in America have manifested an increasing interest in the high alumina cements developed in France which show a strength at 24 hours greater than that obtained with Portland cement at 28 days and which are also said to offer a resistance to chemical attacks of sea water and sulphate-bearing ground waters. Although more expensive than other cements in first cost, manufactured as it is from raw materials consisting largely of a high grade aluminum ore, the exceptional characteristics of this cement have developed a substantial market for the product in Europe. Unfortunately market conditions have been such that inquiries by American engineers have not been effective in developing the importation of the cement in this country.

Because of these conditions and of the growing interest in cement having the property of developing strength quickly, the Atlas Portland Cement Company has organized a subsidiary known as the Atlas Aluminate Cement Company, New York, for the manufacture of high alumina cement and for which purpose it has acquired the so-called Spackman patents which cover the manufacture of all high alumina cements in the United States. This company is now prepared to produce what is known as Lumnite cement at North Hampton, Pa., in ample quantities to meet the demand as it develops. The following facts concerning Lumnite cement will be of interest to engineers whose experience has demonstrated to them the advantage of a cement developing its strength quickly for use in certain special conditions.

The raw materials include a large proportion of high grade aluminum ore (bauxite). The materials are fused and then ground to a considerably greater fineness than the requirements of the standard specifications for Portland cement. The chemical composition is in general as follows:

	Per cent
Silica, magnesium, insoluble, loss, etc.	5
Alumina (Al_2O_3)	40
Lime (Ca O)	40
Iron oxides	15

The strength of this cement is indicated by the following compression tests of concrete specimens in which it has been used, the figures given below representing the average of three specimens expressed in pounds per square inch.

	1 Lumnite cement 2 Sand 4 Pebbles	1 Lumnite cement 3 Sand 6 Pebbles
1 Day	3,441	2,071
2 Days	3,818	2,444
3 Days	4,127	2,598
7 Days	4,391	2,663
28 Days	4,462	2,691

The new cement is used in the same way as Portland cement except that, on account of its more rapid hydration somewhat wetter mixes should be used. Portland cement, even in very small quantities, should not be mixed with Lumnite cement as this destroys the properties of both materials. The cement is not quick setting. It allows ample time for mixing, transporting and placing but after setting its high strength develops rapidly.

Although relatively new in America, cement of the same general characteristics has been used in France for the past 12 years where its properties have been generally appreciated and applied to advantage. For example, the French army

was able to construct concrete foundations for big guns and put them into operation within 24 hours.

While there is no thought that this new product will replace Portland cement, railway engineers may readily appreciate the opportunities for its advantageous use under particular conditions. In the renewal of turntables, for instance, alterations to the foundations requiring the application of new concrete after the old center has been removed, necessarily delay the placing of the new turntable in service until this concrete has developed adequate strength. The repairing of platforms at busy stations offers another field for its use while its application to concrete bridge slabs or deck slabs on girder spans might readily afford opportunities for a simplification of the elaborate plan for the handling of traffic normally imposed because of the necessity for an adequate period for the curing of the concrete. Other applications will readily suggest themselves to the practical railway engineer.

Changes in the Standard Code

THE changes in the standard code of train rules, reported by the operating division at Chicago, on May 15 and adopted without change by the American Railway Association, include a considerable number of improvements tending to put into the standard rules numerous features necessary to bring them in line with certain every day practices which have undergone more or less change during the past few years. Following are notes on the more important of these changes.

General Rule F is amended to require notice to the "proper authority" of any unusual conditions. This may be called merely an improvement in language; and that is true of many of the changes. Added to the general rules is a new one, lettered *M*, requiring employees to take care of themselves in case of defective equipment, dangerous structures, etc. This and other additions are significant as incorporating in the general code long-used rules which heretofore have been found only in the timetables, while yet they have been substantially uniform on many roads. In place of the term "Caution" the code now uses "Restricted speed." This change appears first under the head of definitions—"Restricted speed.—Proceed prepared to stop short of train, obstruction, or anything that may require the speed of a train to be reduced."

Rules 26, 27, 90, 98, D102 and 103 are among those in which the language has been strengthened. Rule D14 has a paragraph added to provide for trains running against the current of traffic. Rule 13 is cut out, and in place of it there is a new one covering emergency whistle signals at interlocking stations.

To Rule 17, which covers headlight practice, there has been added the following paragraph:

" * * * must be dimmed while passing through yards where yard engines are employed; approaching stations at which stops are to be made or where trains are receiving or discharging passengers; approaching train order signals, junctions, terminals, or meeting points or while standing on main track at meeting points."

Rule D 17 has a similar addition.

Rule 34 requires *all members of train and engine crews*, when practicable, to communicate to each other the indication of signals.

To Rule 104, there is added a paragraph, the need of which has been shown by collisions occasioned by wrongful dependence on track-circuit signals when using crossovers, as follows:

"When a train or engine is waiting to cross from one track to another, and during the approach or passage of a train on tracks involved, all switches connected with the movement must be secured in the normal position. Before starting to make the movement, all switches involved must be set and not restored to normal until the movement is completed."

New Rule No. 105 provides for the movement of trains on sidings, and the three following rules have their numbers changed to allow for this addition.

Rule 206 says that in train orders transmitted by telephone all stations and numerals in the body of the order *must* be spelled letter by letter, and then plainly pronounced; the numbers of trains and engines in the address *may* be spelled. Rule 209 provides for writing train orders on a typewriter; but the time, and the word "complete," and the signature of the operator, must be in his handwriting. Rule 210 requires the person receiving a 31 order to read it to the operator; and the engineman must read the order to the conductor, *before proceeding*. Rule 221, Form A, contains the following paragraphs in place of the shorter second and third paragraphs heretofore shown.

When a train order is to be delivered to a train, the fixed signal must be displayed at "stop" for the track and in the direction of the approaching train, and a flag or light must be displayed in the place provided for the purpose, a red flag or light indicating "31" orders or "19" orders that restrict the superiority of the train at that point, a yellow flag or light indicating other "19" orders.

This combination of signals must be acknowledged by the engineman by two short sounds of the engine whistle. In delivering "19" orders that restrict the superiority of train addressed at that point, the fixed signal must remain at "stop" until such orders have been delivered; and in delivering "31" orders the fixed signal must remain at "stop" until the order is delivered as prescribed by Rule 210. In delivering "19" orders without stopping a train the operator must, after the signal has been acknowledged, leave the "19" train order signal displayed until the orders have been delivered, place the fixed signal at its proper position, go on the ground and hand the orders to the engineman and conductor. For freight trains the conductor's copy must be handed on cabin car.

When the "19" train order signal is displayed the speed of the train must be reduced sufficiently to enable the operator to deliver the order. If the engineman fails to catch the order, the train must be stopped and not proceed without a proper train order.

The change in Rule 303 J is typical of what has been done to get rid of the term caution. The indication of this signal is "Approach home signal at restricted speed; name—distant signal."

Clearance card Form A is considerably modified. Provision is made for using clearance card A and clearance card C at the same time, in some cases. A note under Rule 509 says that railroads desiring to avoid stopping trains on ascending grades, or elsewhere, may arrange their automatic signals to permit this. (Permits "tonnage signals" at any place for any or all classes of trains.)

Rule 606 (new) provides for using an interlocking signal as a block signal; and the signalman having train orders to deliver is to inform the engineman by displaying a red or yellow flag, a disk or light. Having acknowledged this hand signal, the engineman may proceed to the interlocking station, but not beyond.

Clearance card K is a new form, to be used in case of failure of interlocking signals. If the signal is also a block signal, clearance card C must also be issued.

Under 501B, where the signal indicates approach next signal prepare to stop, the indication is to be interpreted as "Proceed at a speed reduced to not exceeding one-half the maximum authorized at point involved (not exceeding thirty miles per hour) prepared to stop at the next signal."

Two significant changes in the code are in the shape of notes. That for Rule 11 provides for allowing passenger trains, after stopping, to proceed without extinguishing fusees. A note to Rules 71 and 72 reads:

"Note to Rules 71 and 72. Railroads may, if desired, modify their rules to require trains to wait indefinitely at schedule meeting points for trains of the same class, unless otherwise directed by train order."

Fuel Association Holds Its Convention in Chicago

Addresses by Prominent Railroad Officers Are a Feature of the Opening Session

THE sixteenth annual meeting of the International Railway Fuel Association was held in the Tiger Room of the Hotel Sherman, Chicago, May 26 to 29, inclusive. Six or seven hundred members and guests of the association attended the opening session, taxing the seating capacity of the Tiger Room to the limit and proving by the earnest attention accorded the speakers their vital interest in fuel economy and the affairs of the International Railway Fuel Association.

Undoubtedly a feature of the opening session was the addresses by R. H. Aishton, President of the American Railway Association, and Charles Donnelly, President of the Northern Pacific. Mr. Aishton's address, reported in some detail, follows. Mr. Donnelly devoted his remarks to the proposed consolidation of railroads into a limited number of systems as outlined in the Transportation Act. The association was also addressed by G. W. Reed, vice-president of the Peabody Coal Company, Chicago, and H. A. Daly, president.

President Daly outlined the history of the Fuel Association accomplishments during the last year, describing the important results secured by the prize contest for the best paper on fuel economy. He referred to the growth of the International Railway Fuel Association in size and said that it has come to be regarded as an authority on fuel matters, having received such recognition by the American Railway Association, the Bureau of Railway Economics and the Interstate Commerce Commission.

Mr. Aishton's Address

Equally with everybody connected with the railroad service, and with the public who are dependent on its use, you are also vitally interested in the future destinies of the railroads, their success or failure, and I know of no body of men who have any greater individual influence on their welfare than you and your associates on the battle line of the railways who have to do with the fuel problem.

What is your problem? Considering the aggregate of the coal used on the Class I railroads of this country the figures are so startling that we are apt to get lost, and the use of such figures suggests enormous and unlimited sources of supply. I am just going to quote a few figures to paint the picture:

Total fuel consumption, 1923 (includes fuel oil, equated)..146,500,000 tons
Made up as follows:

Freight	90,000,000 tons
Passenger	32,000,000 tons
Switch	24,500,000 tons
Total	146,500,000 tons

Total cost $507,000,000
Average cost fuel per ton, all fuel..... $3.46

You are all familiar with the measure of freight service, commonly called 1,000 gross ton-miles. One of the large measures of efficiency and economy in moving a thousand tons a mile is how much coal is burned in that operation. Last year it took 160.2 lb. of coal turned into steam to move one ton of gross freight 1,000 miles, or 1,000 gross tons one mile, which, by the way, is 2.8 lb. less than 1922 and 1.8 lb. less than 1921.

I have in my hand a pound of coal. It doesn't amount to much in looks, and few of us would stoop to pick it up or refrain from kicking it down the bank, but in that one pound of coal as applied to 1,000 ton-miles lies the greatest opportunity for economy that I know of. I won't say how many millions or billions of ton-miles were made in the course of the year. Suffice it to say that if you were to move a ton of gross freight 1,000 miles, and did it with that pound of coal less than you used in 1923, and moved the same ton mileage as in 1923, you would have saved in the aggregate 561,987 tons of coal, which at the prevailing price would mean $1,944,000 less than in 1923. Is that worth going after? You men know better than I how you can do it. In the same way, applying that same degree of saving, one pound of coal out of every 160.2 lb. used in passenger service, would save 200,000 tons of coal valued at $692,000. If you applied that same degree of saving to the fuel used in switch service and for other purposes, such as stationary boilers, stations and for heating purposes, etc., it would mean a further saving of 153,000 tons, or $529,000, making an imposing total of $3,165,000 less cost than would have been incurred provided the same amount of fuel was consumed per 1,000 ton-miles as in 1923.

We hear a great deal nowadays regarding scientific investigation, development of methods and appliances for bringing about wholesale greater economies in fuel, and while they may and no doubt do possess possibilities, in my opinion we must take cognizance of the fact that they all have one present vital disadvantage and that may be briefly expressed in the term, capital expenditures. Capital expenditures depend on the earning power of a railroad, and unless the necessary capital can be secured at reasonable terms —and this is, in turn, dependent on the net revenue of the railways—it is absolutely futile to talk about large capital expenditures until conditions improve, although we all may know that such expenditures would produce a good return.

Furthermore, do not overlook the fact that in the last two decades every known appliance for producing economy has been installed on new locomotives and to a very large extent on the larger locomotives as they go through the shops, and while I won't undertake to say what the total capital expenditure has been, in the matter of superheaters alone it runs up over $125,000,000, and in 1923 there was programmed and being installed superheaters to the value of practically $7,000,000. In addition to that, large amounts of capital have been put into brick arches, stokers, coal breaking appliances, self-closing fire box doors and all the appliances with which you are familiar that it is claimed add to economy, besides liberal installation of numerous experimental devices not yet proved but which may lead to economies in labor and fuel costs.

What we have got first and immediately to attack is the problem as it is—the tools as they are in our hands today—and by the application of knowledge, initiative, and a desire to bring about accomplishment, get an immediate result out of these vast capital expenditures. There is hardly an activity or an employee in any department of the railroads who does not have an opportunity to save on fuel consumption and to play his particular part in saving that pound of coal.

For example, take the mechanical department. Is your design of a locomotive such as to bring about the most economical use of fuel? I don't know much about back pressure, but I do know something about an automobile. I know when I have carbon in the cylinder I burn more gas, create less power and bring about more dissatisfaction than is the case if I don't. Isn't back pressure something like

the carbon in your cylinder? Are your exhaust ports, exhaust passages and exhaust nozzles properly designed? In other words, when your steam has done the work is the freest possible outlet given it to the atmosphere? The cut-off and the speed also have something to do with back pressure. In Europe, I understand, they think this is so important that on a good many of the railroads they have a gage in the cab that shows just what the back pressure is. It adds to the effective manipulation of the locomotive to get rid of the steam when used, promptly and without delay and if the necessary steps can be taken to save any of the back pressure incidentally it is reflected in reduction of fuel used. I simply cite this to indicate the importance of this question of back pressure, not with the idea of even suggesting putting gages on locomotives, but to indicate that investigation and care on the part of everybody in avoiding back pressure by well known methods may bring about a very decided improvement.

Take the operating department. I just read a paper by W. L. Richards, an engineman of the Union Pacific, on the advantages of pre-classification. That's its long name. What it really means is switching orders or switching shipping tickets instead of cars, and holding cars when necessary to avoid extra switching and in some cases, movement to destination in train lots. This item alone will save you a pound of coal and more in switching service.

How about standby time at engine terminals? I have just read a statement in the March number of the Engineers' Journal that steam locomotives burn some 29,000,000 tons of fuel while they are out of action—standing by in yards or roundhouses waiting to be put to work. What about it? Whether the amount is over-stated or not, is there not some opportunity for economy?

Improved locomotive terminals are more than mere mechanical contrivances offering means for reducing the cost of handling locomotives at the end of their run and conditioning them for the next run. They are operating features. Every hour that you can save for a locomotive at a terminal is that much to the good, not only in the actual saving of coal but in the use made of the locomotive investment. I will venture the assertion that in this one item alone you can pick up a part of that pound of coal I referred to. I don't know of any subject that will be more productive of useful information than a close check of means and methods, particularly the latter, to bring about a more intensive use of locomotive investment. This goes into everything—into the management of ash pits, shaking of grates, etc.—and the desire on the part of everybody and every department to keep this locomotive moving, because when the locomotive is standing still it is not only the investment in the locomotive but a lot of other investments that are non-productive.

The yard as I have always seen it, wants engines ready whether the trains are ready or not. The roundhouse always wants time. There is a direct conflict of interests that calls for co-operation. If I were to offer a suggestion it would be that the clerk of the yardmaster and the clerk of the roundhouse foreman get their heads together, put this pound of coal in front of them and through cooperative action get the answer. The pound of coal will be saved, without a doubt.

It isn't all the engineman and fireman in this problem of saving coal. I have a suspicion that a more general use of the 19 train order would have a pretty direct effect on the coal pile. Anything that you can do to keep a freight train going, instead of stopping, means the saving of fuel.

One of the greatest means of bringing about a betterment is through the exchange of ideas, such as is brought about through a meeting of this character. If some fellow has an idea as to some better way of doing something, for his own good, for the good of the railroad he serves and particularly for the benefit of the entire railroad situation, he ought to make it known. If there is anything in it, you men ought to be big enough to recognize it and go home to your managements and try to get it going. I know the temper of management well enough to know that anybody that has any proposition that will save a pound of coal, and particularly if connected with it they don't have some ideas about large capital expenditures being the only remedy to bring it about, they will meet with a very warm hearted reception.

You have had in the past years papers without number from scientific bodies, from our great universities, from technical and practical experts, and the latest development was a series of most excellent papers brought out by a competition inaugurated by your association, and in those papers practically every phase of this fuel subject has been covered. It would be useless for me to stand up here this morning and tell you of the things that have been written, and which you have read, on all these various matters. Just get out of your head that it is a big problem—it isn't; just get out of your head that it is wholly a scientific, technical problem—it isn't; all the science and technique in the world is powerless alone and without back of it the determination to do the job right; just get out of your head that it is Bill Jones' problem—it isn't. It is your problem. Just get into your head that in this pound of coal, and in your personal relation to it, lies the answer to the question.

Having made up your mind that it can be done, don't, at the end of this meeting, simply pass a set of resolutions and go and forget all about it, but remember there are two million other railroad employes in this country to whom it will be your job to get this message. Go home and tell your management about it, tell them you believe in it, if you do; get them behind it and I will predict that when you next have a convention of this association, you will find you have made definite progress and you will be able to point with pride to what you actually have accomplished.

Report of Committee on Feedwater Heaters

The number of feedwater heaters applied or on order up to May 1, 1924, is 2,123. During the current year heaters have been applied on 21 switching locomotives and the roads report savings in this service.

The report gave a brief summary of the difficulties being encountered in the maintenance of both open and closed type heaters and the means which have been, or are being developed to overcome them. Some of these are being overcome by a redesign of the parts and others by modifications in heater operating practice.

Exhaust Steam Injectors

The exhaust steam injector has been tried out on nine different roads in this country and on a total of 24 locomotives. The first design, of which 19 were applied, involved the use of levers for controlling the injector. The last five injectors applied are equipped with a single control valve somewhat like an engineer's brake valve which distributes steam to pistons for operating the various valves and greatly simplifies the handling of the injector by the crew.

Objections to the exhaust injector as compared with the feedwater heater pumps are its limited range, which is about the same as that of the live steam injectors, and its falling off in economy as the temperature of the water in the tender increases. One road which had a Mallet locomotive equipped with an exhaust steam injector in mountain territory, exchanged the original for one of smaller size in order to be able to use it continually instead of cutting it in and out of service.

The road, which has the greatest number of exhaust steam injectors in service, reports after a two-years' service test

practically no trouble to get the men to operate the injectors as they become more familiar with them; that the superheat temperature obtained with the injector working exhaust steam is about 15 deg. less than when working the live steam injector; that the exhaust steam injector when using exhaust steam requires more attention than the live steam injector, but is as reliable as the live steam injector when in good condition, and that it will not blow back in the tank or work improperly without giving indication at the overflow. This road reports that the exhaust steam injector undoubtedly requires more terminal attention than the average live steam instrument because there are more parts.

The committee states that the reports to date indicate that the savings made in light service are small and increase as the capacity of the boiler is approached.

Feedwater Purifier

The committee finds that only one road has a purifier under test together with the open type feedwater heater. This has not been in service for a sufficient time to determine the full benefit. The report from this road indicates that they are assigned to a bad water district and are showing improved conditions when compared with locomotives not so equipped. The feedwater enters the boilers at about 300 deg. F.

The purifiers are made up of cast iron bodies fitted with steel troughs. These troughs are filled with a series of dams. The feedwater passes into the purifier which is under boiler pressure through a standard boiler check and the water in going through the purifier drops some of its scaling constituents. From there it is carried to the bottom of the boiler barrel by two more troughs inside the boiler, one on each side. It has been found that a portion of the incrusting solids precipitate and are carried to the bottom of the barrel, from which they are removed through a perforated pipe connection to one of the blow-off cocks. The purifier troughs can be removed through the end of the purifier and cleaned.

No arrangement has been made for the gases which tend to accelerate corrosion to be left in the steam space or automatically removed before the water goes to the boiler, other than that provided by an open type feed-water heater. Tests have been made on railways where the open type of feedwater heaters was standard and it is reported that from 85 to 90 per cent of the oxygen from the feedwater supply has been eliminated.

Feedwater Heating in Terminals

It has been conservatively estimated that 20 per cent of all locomotive fuel is consumed at terminals and since none of the fuel burned at terminals is productive from a transportation standpoint, this loss is a serious one. That part which is incident to moving locomotives to and from the trains is to some extent unavoidable. Another terminal fuel loss is proportional to the time locomotives are held under steam. This can be lessened by giving the matter more methodical attention and by enlarging or rearranging locomotive terminal facilities to conserve heat in water from boilers blown down and return it to boilers as hot water when filled up in preparation for road service so that the motive power can move more promptly to and from the enginehouse. At least half the locomotive fuel consumed at terminals, however, is incurred in heating the water supplied to locomotive boilers that have been washed or refilled, and to this must be added the fuel burned in stationary boilers on account of the blower steam required by locomotives being steamed up. The extent of this loss depends on the temperature difference between water supplied to the boiler and the steam generated.

Fuel saving can be accomplished by filling the boilers with a mixture of steam and hot water at such pressure and temperature that a working steam pressure can be built up in the locomotive before the fire is lighted. The use of otherwise waste steam from boilers being blown down as a heating medium is a straight saving and the use of live steam as a direct feed water heating medium increases the quantity of steam supplied by the stationary boilers but eliminates the necessity for using stationary boiler plant steam in the stack blower so that all of the heat in this steam is conserved. Tests of this direct steaming method are now under way and it is proposed that the committee extend the scope of its work for the coming year to include a study of the fuel economies resulting from this method and other approved practices for heating feed water at terminals.

The members of the committee are E. E. Chapman, A. T. & S. F., chairman; E. A. Averill, Superheater Company; S. H. Bray, Southern Pacific; J. A. Carney, Chicago, Burlington & Quincy; V. L. Jones, New York, New Haven & Hartford; A. G. Hoppe, Chicago, Milwaukee & St. Paul; J. M. Lammedee, Worthington Pump & Machinery Corp.; H. A. Macbeth, New York, Chicago & St. Louis; L. P. Michael, Chicago & North Western; George S. Mikles, New York, Ontario & Western; George E. Murray, Grand Trunk Western; L. G. Plant, National Boiler Washing Company, and J. M. Snodgrass, University of Illinois.

Discussion

The discussion of this report indicated that defects in the design and construction of early types of feed water heaters have been largely corrected in present designs. One member from the Southern Pacific stated that this road has 187 feet water heaters of the open and closed types in service, experience showing that both types have successfully passed the experimental stage. The member commented particularly on the reduction in the number of water stops possible with feed water heater equipped locomotives owing to the return to the tender of 1,500 gallons out of every 10,000 gallons of water supplied.

Comment regarding the frequency of washing out the closed type heater developed that this period is entirely dependent on the character of the feed water and its treatment, in some cases being two weeks, in others one month and in good water territory four months or even longer. Whenever due to the formation of scale the loss due to efficiency in the feed water heater exceeds the cost of cleaning, this operation obviously should be performed.

P. O. Wood, assistant superintendent of motive power of the St. Louis-San Francisco stated that feed water heaters of both types used on the Frisco are efficient, have developed no excessive maintenance cost, and have been in service 12 months with very satisfactory results. He said that the closed type of heaters is washed once a month, this being at the time of the monthly inspection. Experience shows that the washing operation is simple and can be readily handled while doing the other work performed on the locomotives at this time. A member from the Santa Fe stated that operation of the closed type of heater in bad water country developed that the feed temperature of 240 deg. F., with a clean heater dropped to 205 deg. after the locomotive had made about 1,200 miles.

As a result the washing period is based on mileage and 1,200 miles has been selected as it is not desired to have the feed water temperature drop below 205 deg. F.

There was considerable discussion of the exhaust steam injector, J. B. Hurley of the Wabash stating that, in his experience, the exhaust steam injector works satisfactory as long as there is no change in cut-off or throttle opening. Otherwise water is wasted at the overflow. Mr. Hurley stated that the injector must be made to regulate itself automatically before it can be a success. Another member from the Kansas City Southern said that the loss of water at the overflow was frequently occasioned by too high a back pressure caused by the engineman lengthening the cut-off in anticipation of a grade. This was the fault of the engineman and should not be charged against the exhaust steam injector.

Symposium on Coal and Oil

Following the report of the committee on boiler feed water heaters the convention listened to a symposium of the production of coal and fuel oil in the various important production centers as follows: Northwest territory, A. W. Perley, O. W. R. & N.; Southwest territory, J. M. Johnston, M. K. & T.; New England States, O. J. Brown, B. & M.; Ohio, Pennsylvania, West Virginia and Kentucky, R. E. Rightmire, Consolidation Coal Company; other Central States, W. J. Overmire, C. C. C. & St. L.; Canada, A. L. Graburn, Canadian National; Australian coals, Edwards Dillon, Victorian Railways; North Dakota lignite, Professor E. J. Babcock, University of North Dakota; Mid-continent oil field, J. M. Nicholson, A. T. & S. F.; California oil fields, W. T. Small, Northwestern Pacific, and Mexican oil fields, C. S. Pond, S. P.

(An account of further proceedings of the convention will appear in a later issue.—EDITOR.)

Dangerous Course of Modern Political Thought*

Our Greatest Need Is Honest Thinking by Those Responsible for the Nation's Welfare

By F. W. Sargent
Vice-President and General Counsel, Chicago & North Western

IN THE FEDERAL CONSTITUTION, the people delegated to the national government the power "To regulate commerce with foreign nations, and among the several states and with the Indian tribes." For more than three decades following the adoption of the Constitution, statesmen and jurists had insisted that the commerce clause at the most only meant power of concurrent regulation and that each state acting in its sovereign capacity had retained unto itself full power to regulate all commerce, both state and interstate. In the meantime states had granted to their citizens exclusive franchises to carry on commerce on the rivers and waters within their respective boundaries and each had prohibited the citizens of the others from operating boats propelled by steam within or between their respective jurisdictions.

Commerce between the states was stifled until made free by the decision of the Supreme Court in the case of Gibbons vs. Ogden. And now in this one hundredth anniversary of the year of that decision the conflict is being waged again—and the struggle is to keep commerce between the states free; free from selfish local restraints and regulations inspired by visions that do not see beyond local geographical boundary lines.

In practice steam transportation has obliterated state lines. Today every state in the union has an immediate and a vital interest in the treatment accorded to common carriers by railroads in every other state. An order of the local authorities in California requiring its interstate carriers to expend 45 millions of dollars for a union station is of vital concern to the shippers and passengers of every other state who must pay the bill through freight and passenger rates.

Our Forty-nine Sovereignties

For the last quarter of a century railroads have struggled under the regulations—many of them conflicting in character—of 49 separate sovereignties. While the Supreme Court asserted the supremacy of the commerce clause of the Constitution, it left the states free to enact local police regulations, including intrastate rates, unless and until Congress should act upon the matter. In the meantime states have vied with one another to secure for their own citizens the lowest possible rates, with little regard to the welfare of the carriers and with no co-ordinated understanding as to the financial necessities of systems serving many states.

Heretofore states were left free to require unlimited expenditures of capital in non-productive improvements, under the guise of the reserved police power. This power has been most liberally exercised, without regard to the financial ability of the carrier to bear the burden, and without consideration of the effect such burden would have upon the shippers of other states.

The result has been that with costs of rendering service constantly climbing higher and higher, and rates paid for that service going proportionately lower and lower, the carriers finally found themselves in a position where their net return was reduced to the vanishing point, and intensive railway development brought to a standstill. Indeed, in this western zone operating expenses are today 122 per cent higher than in 1913, while the average rates are about 50 per cent higher.

Transportation by steam railroads has passed entirely out of a local into a national affair. The geographical boundary lines of the states no longer offer the slightest bases for state regulation of interstate carriers.

In the administration of the parcel post service, by means of which all sorts of commerce is carried on, State lines are obliterated and rates are made without relation thereto. Such commerce moves over the same rails of the same common carriers, as if shipped as freight or express, but no one claims that it should be subjected to the local and conflicting jurisdiction of 49 separate sovereignties.

What basis in fact or in reason in there for applying a different principle to the same commodities, when moving in the same direction, over the same rails and by the same instrumentalities, merely because it moves as freight or express?

The Transportation Act views commerce in its national rather than its local aspect. To repeal it would be a step back toward that chaotic condition that was largely responsible for the destruction of railway credit, and thereby the cessation of intensive railway development so necessary if transportation is to keep step with and encourage the industrial progress of our common country.

The same school of political thinking that has attempted to discredit the Federal Reserve Banking System has likewise been inciting the agricultural communities to wrath against their transportation systems, and efforts have been made to convince them that all of their difficulties are traceable to the Federal Reserve Banking System and the railroads.

Less than eight per cent of the farmer's expenses are represented by transportation charges and the effort of the

*Abstract from an address by Mr. Sargent at the annual banquet of the Western Railway Club in Chicago on May 23.

demagogue has been to convince the farmer that if a part of this eight per cent of his expenses were removed most of his difficulties would vanish. It has been and is the constant effort of many men in political life not only to secure but to perpetuate their tenure of office by misleading their constituents into believing that the railroads, and that capital that has made the railroads possible, represent some dangerous monster inimical to the welfare of the general masses.

To this end we hear constant talk of high freight rates oppressing the people for the enrichment of Wall street; and this notwithstanding the fact that in the last three years the railroads of the country have returned back to the people through wages, purchase of supplies and materials, interest on bonds and taxes, substantially 95 per cent of all the money they have received, and that the amount of dividends received by the owners of the property has been so small as to have substantially no effect upon the general level of freight and passenger rates.

Freight Rates and the Cost of Living

At a hearing before the United States Railroad Labor Board in 1921, there was introduced in evidence, by those representing the unions, a table showing the amount of food required for a family of five to support them in health and comfort for the period of a month. The total number of pounds contained in the table is 502.

It took this table and then hauled the various items referred to therein great distances—fresh meats from the Missouri River, fish from Duluth, eggs from the Missouri river, flour from Minneapolis, rice, sugar and coffee from New Orleans, fresh vegetables and deciduous fruits from California, butter from Marshfield, Wis., potatoes from Prince ton, Wis., oils and fats from the Missouri river. And I applied to the various items contained in the table the existing freight rates and by so doing found that the total charge for all the food required for a family of five in the city of Chicago for the period of one month, so far as freight rates are concerned, comes to $2.70, or 54 cents per person.

Let me give you another illustration:

Take the average complete winter outfit that a man wears in Chicago; to wit: A suit of cloths, an overcoat, a hat, shoes, underwear, stockings, shirt, collar, tie, gloves, two handkerchiefs, etc. Offhand, I imagine that the average cost of such a complete outfit for the average man will run somewhere between $150 and $200. The freight charges on such an outfit from New York to Chicago by l.c.l. rates comes to the grand total of 23½ cents.

Last fall I made some other interesting computations. I bought in the early part of April a cantaloupe at the fruit store where I trade in Chicago and they charged me 30 cents for it. It weighted two pounds and came from the Imperial Valley in California. I figured out the freight charge and found it was 2.92 cents. At the same time I bought half a dozen oranges that weighed 2½ pounds and they charged me 30 cents for these, and I figured out the freight charge and found it came to 4⅓ cents. These oranges came from Southern California. I also bought at the same time six lemons. They weighed 1⅓ lb. I figured out the freight charge and found it came to 2 cents. They charged me 30 cents for the lemons. On the first item the freight charge was 3 cents, on the second 4⅓ cents and on the last 2 cents, but no differential was made in the retail price because of any difference in the freight charge.

The service which the railroad performed for me in bringing the cantaloupe, oranges and the lemons to Chicago consisted in transporting this fruit half way across the continent, through the Rocky mountains and across the deserts, affording refrigeration and delivering the fruit in Chicago in as good condition as when it was received at the point of origin in the Imperial Valley and in Southern California; and for the cantaloupe, six oranges and six lemons the railroad charged for its total service 9 1/3 cents.

I bought a straw hat early in August last year. The hats that I looked at ranged from $3 to $7, and I finally bought one and then went to the office and figured out the freight charge on the hat from New York to Chicago and from Philadelphia to Chicago. I found that the hat weighed 5¾ ounces, and that if it came from New York to Chicago, the railroad had charged me the exorbitant price of 0.51 cents for services. And if it came from Philadelphia they had charged me 0.49 cents for bringing the hat across the Alleghenies and through the congested territory into the city of Chicago.

I, then, feeling somewhat aggrieved at the price we were paying for bread after I learned that the Minneapolis millers had reduced the price of flour per barrel, purchased a loaf which I paid 15 cents for, and went home and weighed it. I found it weighed 1½ pounds. I was not able to determine the exact weight of the various ingredients contained in the loaf of bread, and therefore assumed that it was all flour that had come from the wheat fields of South Dakota. I figured out the freight charge on my loaf of bread from the farmer to Chicago.

First, I assumed that the farmer shipped his wheat to the mills in Minneapolis; that there it was made into flour and then the flour was shipped to me from Minneapolis to Chicago. I assumed that the wheat originated at Vilas, South Dakota, and I found the distance to Chicago via Minneapolis to be 727.1 miles. And I found that the railroad had received, first, for transporting the wheat from Vilas, South Dakota, to Minneapolis and thence the flour from Minneapolis to Chicago, a total of 0.495 cents, and that is what the freight charge on my loaf of bread amounted to.

Railroad Dollar vs. Canal Dollar

One great transportation enterprise maintained by the people of the United States to which reference is sometimes made is the Panama Canal. Let us compare this to the service rendered by the Chicago & North Western.

The total value of the North Western proper, not including the Omaha, as used in the decision of the Interstate Commerce Commission in Ex Parte 74, was something less than $451,000,000. The cost of the Panama Canal to the American Government up to June 30, 1921, was $443,000,000. It will therefore be seen that the property investment account of the canal and the railroad are approximately the same.

Now, let us compare the two enterprises purely from the standpoint of transportation service. The authority for my statements may be found in the report of the Governor of the Panama Canal. That report shows a net income for the fiscal year ending June 30, 1923, of $10,001,068, but when four per cent upon the investment is included, a deficit of $7,718,934. This deficit is paid by the taxpayers of the United States.

If the canal paid taxes back to the people upon the same basis which the railroad does, it would pay two per cent upon $443,000,000, or a total of $8,860,000. Adding this to the $7,718,934 deficit, would make the total amount which the canal cost the tax-paying public in 1923, $16,579,000.

In 1923, 19,567,875 tons passed through the canal. The canal is 50 miles long. Therefore, the canal carried in 1923, 978,373,750 tons one-mile. The ton miles of revenue freight carried by the Chicago & North Western Railway in 1923 were 9,179,000,000. Every dollar invested in the canal carried in 1923, 2.2 tons of freight one mile. Every dollar, measured by the Chicago & North Western property investment account as used in Ex Parte No. 74, in 1923 carried 20 tons of freight one mile in addition. So that a dollar in the railroad performed more than 10 times as

much service by way of transportation in 1923 as a dollar in the canal.

Now let us see what the comparative cost was in 1923. The average rate per ton mile for transportation on the railroad was 1.2 cents. The average cost to the taxpayers of the United States per ton mile for transporting freight through the canal was 1.7 cents, to say nothing about the ship or bottom charges assessed directly against the shippers as a part of the rate. In other words, it cost the taxpayers of the United States $16,579,000 by way of interest and taxes as compared to the railroad to transport 978,393,750 tons one mile through the canal. These charges would equal, therefore, 1.7 cents per ton mile which it cost the American taxpayers for tonnage that passed through the canal in 1923, or more per ton mile than the shipping public paid to the Chicago & North Western in 1923. The fact is that transportation by rail in the United States is the cheapest service that the American people have when compared with the cost of any other class of service which we buy from day to day. Indeed, the freight rates in the United States are the lowest of any country in the world.

Efforts to Destroy Railway Credit

Notwithstanding the fact that the American dollar today can buy more service in rail transportation than in any other field of operation in which the American dollar functions, nevertheless we find for some reason a constant effort, emanating from certain political sources, to break down the efficiency of our railroads by destroying their credit.

Something like 200 bills affecting railroads have been introduced in the present Congress. Time will not permit a review of these, but it may be asserted without fear of successful contradiction that if any substantial number of them should pass, the object of the authors would be accomplished, the credit of the railroads destroyed, the development of rail transportation brought to a standstill, and in all probability government ownership will be the only means of escaping the chaotic condition that would thus be produced.

Almost all the attacks are directed at the return upon capital invested in the railroads, notwithstanding the fact that the return on capital plays substantially a negligible part in the effect upon the general level of freight and passenger rates.

Among the bills offered is one by the senior Senator from Wisconsin providing that freight rates on agricultural products be reduced to the pre-war basis. By which we are advised that he means the 1913 basis. This means that the roads in the western district would have no net over fixed charges—and that the larger granger railroads would be forced into bankruptcy.

Railway taxes per mile of road are now 160 per cent higher than they were in 1913. In the western district operating expenses are 122 per cent higher than they were in 1913. Since 1913 the railroads of the western district have increased their property investment by 17 per cent, but in 1923 their net railway operating income was less than it was back in 1913. In the face of this situation how is it possible for thinking men entrusted with the great power of legislation to solemnly propose in the Senate of the United States to reduce rates to the 1913 level?

Railway Valuation

But this is not all. The same Senator has offered a bill to change the whole scheme of railway valuation. In 1913 he sponsored the present valuation law. Now that the work thereunder is nearing completion and after the government and the railroads have spent over 80 million dollars, it is proposed to abandon the plan and go to the so-called prudent investment theory.

The La Follette Valuation Law of 1913 named the three elements constituting the measure of value for rate-making purposes, to wit: Cost of reproduction new; cost of reproduction new, less depreciation; and original cost to date. These are the elements which the Congress of the United States announced to all investors would be given their proper relative weight and consideration pursuant to the decisions of the courts in measuring the value of railway properties.

Such has been the announced law of our land by the decisions of our courts for more than a quarter of a century. It is now proposed to repudiate it all for an uncertain impracticable standard called prudent investment.

The prudent investment theory will keep new capital from any industry to which it may be applied. For the purpose of making the proposed theory easily understood, let us reduce it to a plain example:

Let us divide the history of railroad building in the United States into two periods,—the first being the period prior to 1914; the second subsequent thereto. Let us then imagine that there are only two railroad systems in the United States,—one built in the first period, and with its additions and betterments to date having cost $100,000,000; the other built entirely in the second period at a cost of $200,000,000, since the average price of labor, materials, etc., for the second period have been at least double those of the first period. Let us then say that the entire country consists of one zone. That under the proposed law the combined properties are entitled to earn six per cent. The railroads, however, are of equal mileage, equal tonnage and traffic conditions, and have an equal amount of equipment. Their rates are the same. Together they would be entitled to earn six per cent on $300,000,000, or $18,000,000. Since they have the same mileage, the same traffic and the same expenses, each railroad would therefore earn $9,000,000. This would be 9 per cent on the first railroad and 4½ per cent on the second railroad. If such had been the law, then how could capital have been induced to come into the business during the second period and mingle itself with the capital of the first period since by so doing it would be entitled to only a 4½ per cent return?

While this is a simple and crude illustration, yet does it not in fact demonstrate what the exact situation would be even as applied to our numerous railroad systems and capital expenditures made in different periods of time?

Furthermore, the so-called prudent investment theory gives no consideration to the decrease or the increase in the value of our medium of exchange, called "the dollar," as that value varies different periods of time. If the return upon any investment is always to be limited to the number of dollars used in any given period, with no relation to changed economic conditions involving the depreciation of the dollar, all capital would seek employment elsewhere. By giving consideration to the present value of property devoted to the public service, under the rule announced by Congress in 1913 and always adhered to by the Supreme Court of the United States, this situation is to some extent overcome and equalized.

The entire attack made upon the railroads has to do with valuation and the return on capital. And this in the face of the fact that the railroads have not earned 5¾ per cent on the value fixed by the Interstate Commerce Commission in any year since the termination of federal control, 5¾ per cent even upon the value which the most radical politicians are willing to place upon them.

The fact is that since federal control the railroads have returned back to the people through wages, purchase of supplies and materials, taxes, and interest on bonds, approximately 95 per cent of their gross revenues. Indeed, you could wipe out all capital and allow nothing for interest on bonds or dividends on stock, and on this account you could not make any material reduction in freight and passenger rates.

New York Central Has Best Year in History

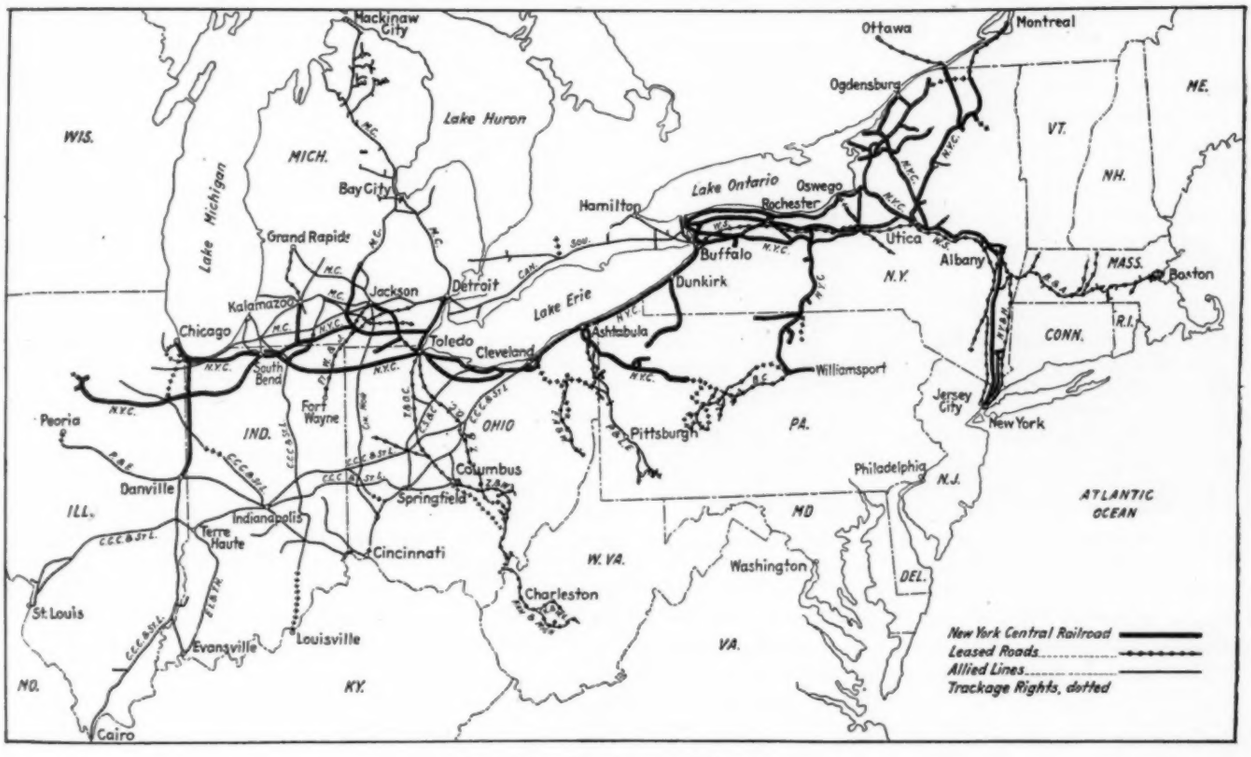
Has Corporate Net Income of $45,339,427 and Surplus After 7 Per Cent Dividends of $27,748,778

In the memorial to the late Alfred H. Smith adopted by the board of directors of the New York Central at its meeting on April 9, there appeared this statement: "When the government returned the railroads to their owners, Mr. Smith so rehabilitated the several lines and established such harmony in the working of the system that service to the public was restored and improved and every department of the road brought to a very high degree of efficiency. His last work, a few hours before his death, was completing an annual report which was the most favorable in the history of the company."

The annual report of the New York Central for the year ended December 31, 1923, covering the last full year of President Smith's administration, was issued to the public on Wednesday. It is in many ways a remarkable document. It shows a corporate net income available for dividends of $45,339,427. This compared with $20,635,186 in 1922 and represented an increase over the 1922 figure of no less than 120 per cent. The increase in net is all the more striking when it is remembered that the results for 1922, when they were announced in the annual report for that year, were considered good. The 1922 annual report was published at about the time when the action was taken to increase the dividend rate from 5 to 7 per cent. The New York Central 5 per cent dividends paid in 1922 totaled $12,876,985, and were earned with a margin of over 7½ million dollars. Had the 7 per cent rate been paid in 1922 there would have been a margin over dividends of approximately $2,000,000. The 7 per cent rate was established in June, 1923. In 1923, there were paid, therefore, one quarterly dividend of 1¼ per cent and three quarterly dividends of 1¾ per cent, making a total of 6½ per cent paid in dividends during the year. These dividends totaled $17,432,978. For 1923 the balance after dividends and certain small appropriations for sinking funds, etc., was $27,748,778.

Benefited from Previously Reduced Costs

Generally speaking, two important features stand out in recent New York Central history. One is the somewhat striking manner in which the property reduced its operating expenses following the return of the railroad to private control. The New York Central was judged to be practically on a pre-war earnings basis in 1921. In 1922, it suffered from the coal strike, but was not severely hurt by the railway shopmen's strike because it was one of the roads to settle under the Willard-Warfield agreement. In neither 1921 nor 1922 did it handle a normal volume of traffic. The splendid operating results in 1923 followed because the heavy traffic of the year was handled at costs reduced from the war-time level. In other words, the New York Central had already been put in a position so that it could derive full benefit from the year's heavy traffic. The other feature about New York Central, which has been given considerable attention, is the part it played in the railway operating accomplishment of 1923. The heavy traffic of 1923 was principally in the east, and because of its strategic location the New York Central was called upon to perform unusual duty. Reports from various quarters throughout the year were to the effect that



The New York Central System

fast freight service on the New York Central was being handled remarkably well. The property was, of course, benefited, as were all roads, by the unusual comparative evenness of traffic volume throughout the year.

The 1923 Operating Results

The New York Central did not carry a record-breaking traffic in 1923. It carried more revenue tons of freight than in any previous year, but its revenue ton-miles were less than those for 1918 which, from this standpoint, still stands as the busiest year in New York Central's history. The average haul on 1923 traffic was the shortest reported since 1914. For 1923 the figure was 192 miles; in 1918 it was 203. It was a feature of the heavy 1923 traffic of the roads of the country as a whole, that it was not moved as far on the average as in various preceding years.

Gross earnings in 1923 were greater than for any previous year. This was also true of net operating revenues—gross revenues less total operating expenses—which exceeded those of any preceding year by a wide margin. Net operating revenus for 1923 totaled $86,573,167. The figure reported for 1922 was $66,219,628. The best figure of net operating revenues ever reported in New York Central history prior to 1923 was $71,846,679 in 1916. The 1923 operating ratio was 76.29; that for 1922, 79.09.

In 1923, the New York Central handled 118,633,168 revenue tons of freight, which tonnage exceeded that of 1922 by 32,555,935 tons, or 38 per cent. It is of interest that of the increase in revenue tons 71 per cent was in coal, coke and iron ore. The bituminous coal tonnage of 1923 was 35 per cent of the road's total tonnage. It was 63 per cent in excess of the tonnage handled in 1922 (which, of course, was reduced by the coal strike of that year), and it was the largest tonnage of bituminous ever moved in New York Central history. The increase in 1923 as compared with 1922 in total tonnage of products of mines was 58.5 per cent. The increase in tonnage of manufactures and miscellaneous products was 28 per cent. Revenue ton-miles in 1923 totaled 22,765,000,000, an increase over 1922 of 29 per cent. As noted above, the largest traffic from the standpoint of revenue ton-miles ever handled was in 1918, in which year the revenue ton miles totaled 23,851,000,000. The revenue tons in 1918 were 117,495,612.

New York Central's freight revenues in 1923 were $235,652,033, an increase over 1922 of 19 per cent. Total revenues were $365,175,188 as compared with $316,620,098 in 1922, an increase of $48,555,090, or 15 per cent. The 1923 total operating expenses were $278,602,021 as compared with $250,400,470 in 1922, an increase of $28,201,551, or 11 per cent. There was an increase of about $7,000,000 in maintenance of way and structures; of about $9,500,00 in maintenance of equipment, and of about $10,500,000 in transportation. The ratio of transportation expenses to total operating revenues in 1923 was but 34.93 per cent, which will be recognized as representing an unusually favorable condition.

The New York Central was not burdened with as great expenses proportionately on account of the shopmen's strike in 1922 as were many other railroads. The average increase for the roads of the country as a whole in maintenance of equipment expenses in 1923 as compared with 1922 was 17.1 per cent. In the case of the New York Central the increase was only 11.5 per cent. The total increase in maintenance of equipment expenses was $9,530,904. There was an increase of $8,000,000 in the primary account of repairs to steam locomotives, or about 42 per cent. There was, however, a decrease of $3,000,000, or about 9 per cent, in freight car repairs. The large increase in repairs to steam locomotives is attributed to more intensive use of power incident to handling the larger volume of business and to the program of putting motor power in the most efficient condition.

Net Operating Income $65,815,799

The New York Central's net operating income in 1923 was $65,815,799, which compared with $50,571,544 in 1922, and showed an increase of $15,244,255, or 30 per cent.

The figures of New York Central revenues and expenses quoted above do not include the results of operation of the separately operated Boston & Albany, Pittsburgh, McKeesport & Youghiogheny, and Ohio Central Lines. The earnings for these lines are shown in the income account under "separately operated properties, profit" or "separately operated properties, loss." In 1923, there was a net profit of $1,757,199. In 1922, there was a net loss of $2,092,949. The Boston & Albany reported a profit of $1,545,068, or about $70,000 more than in 1922. The P., McK. & Y. had a profit of $1,914,956 as compared with but $42,500 in 1922. In 1923, there was a loss on Ohio Central Lines of $1,695,748 as compared with a loss on these lines in 1922 of $3,586,808. Undoubtedly the principal reason for the increase in net shown by separately operated properties was due to the heavy 1923 coal traffic as contrasted with the strike conditions of the preceding year. The closer affiliation of the lines in the Ohio Central group may, however, have offered part of the reason for the decrease in their cost of operation.

Dividend Income

The New York Central in 1923 reported the largest dividend income for several years, totaling $14,464,455 as compared with $10,309,803 in 1922, an increase of $4,154,652. This increase in dividends was due principally to increased dividend income from the Big Four and Michigan Central. In the case of the Big Four, it followed from the large acquisitions of Big Four stock in 1922 under the exchange agreement. There were 467 additional shares of Big Four common and 2,181 of preferred acquired in 1923. At the end of the year the New York Central held 84.55 per cent of the Big Four preferred, 91.31 per cent of the common and 90.12 per cent of the total outstanding capital stock. During 1923, the New York Central acquired 3,272 additional shares of Michigan Central and owned at the end of the year 177,647 shares, or 94.81 per cent of the total outstanding. The Michigan Central, which paid 4 per cent on its stock in 1920, 6 per cent in 1921, and 8 per cent in 1922, was put

New York Central Railroad Operating Results, Selected Items, 1914 to 1924
(Excludes Operating Results of Boston & Albany and Ohio Central Lines)

Year ended Dec. 31	Mileage	Revenue tons	Revenue ton miles	Average haul	Rev. per ton-miles cents	Rev. train load	Rev. car load	Total operating revenues	Total operating expenses	Net operating revenue	Op. ratio	Corporate net after charges
1914	5,640	80,446,739	15,150,314,000	188	0.595	642	19.44	$152,351,590	$113,348,423	$39,003,167	74.40	$9,358,248
1915	5,640	87,828,429	17,617,028,000	201	0.592	743	20.42	167,912,333	109,394,345	58,517,989	65.15	27,711,474
1916	5,689	106,407,668	21,382,081,000	201	0.598	766	21.38	201,585,049	129,738,369	71,846,679	64.36	45,659,217
1917	5,685	110,237,661	22,542,548,000	204	0.603	843	24.15	216,267,517	153,597,905	62,669,612	71.02	25,599,220
1918	5,682	117,495,612	23,851,288,000	203	0.737	891	26.36	269,270,957	210,637,849	58,633,108	78.23	17,917,122
1919	5,675	96,048,798	20,186,750,000	210	0.862	881	24.22	283,659,331	224,964,912	58,694,419	79.31	19,917,251
1920	5,684	110,753,433	22,567,929,000	204	0.930	895	26.16	338,624,456	317,799,173	20,825,283	93.84	13,734,688
1921	5,704	74,475,185	14,831,625,000	199	1.208	727	22.01	292,130,995	221,768,390	70,362,605	75.91	22,295,686
1922	5,710	86,077,233	17,648,981,000	205	1.122	802	22.29	316,620,098	250,400,470	66,219,628	79.09	20,635,186
1923	5,699	118,633,168	22,764,912,000	192	1.035	862	24.15	365,175,188	278,602,021	86,573,167	76.29	45,339,427

on a 10 per cent semi-annual basis in June, 1923. There was also a 6 per cent extra dividend in 1922 which accrued the parent company in 1923.

Additions and Betterments

The New York Central reports are always characteristic in the notations made of the large amounts spent for additions and betterments. The most important project mentioned in the 1923 annual report is the Hudson River Connecting Railroad, or the Castleton Cut-Off. This embodies a bridge across the Hudson River south of Albany, a new yard to hold 11,000 cars, etc., and will afford much improved communication between the lines west of Albany and the lines east, and notably as concerns the Boston & Albany, besides which there will be improvement in operation due to avoidance of the congested conditions at Albany. This project is deemed of sufficient importance so that one page of the 1923 annual report is devoted to a two-color map showing the location of the new line. The entire project was a little more than half completed at the end of 1923, and thus far the New York Central has advanced $9,910,000 for the work.

The total expenditures for additions and betterments in 1923 were $32,527,095, not including $3,550,539 spent for improvements on leased railroad property. There was a net increase in investment in roadway of $13,824,558 and of $18,702,537 in equipment. Neither of these figures was as large as has been spent for these purposes in various preceding years. The New York Central has always maintained an advanced policy with reference to purchases of equipment. New locomotives acquired in 1923 totaled 137, new freight cars, 7,740, and passenger train cars, 96. There were heavy retirements so that the amount of equipment in service at the end of the year was less than at the beginning. The figures quoted do not include those for the Boston & Albany and the Ohio Central Lines.

Taxes

The New York Central's corporate income, available for dividends in 1923, was not the greatest in the company's history. In 1916 the company had a net corporate income of $45,659,217; in other words, about $350,000 greater than in 1923. The reason that the 1916 income was large was due to unusual dividends received from investments as well as to the extremely favorable operations of that year. It is of interest, in this connection, that in 1916 the New York Central Railroad paid in taxes $8,481,549, whereas in 1923 its taxes totaled $20,053,594. The federal income tax paid in 1923 was particularly large, due to the large net income for the year. The federal income taxes totaled $4,362,417 and the capital stock tax, $318,851, a total of $4,681,268. It is of interest that federal taxes alone in 1923 amounted to over half of all the taxes paid in 1916.

Du Pont-Simplex Type B Stoker

PRACTICALLY all forms of locomotive stokers, past and present, transport the coal from the tender to the locomotive with some type of screw conveyor, to a point on the locomotive where it is elevated by vertical or slightly inclined screw conveyors to the point from which it is distributed to the fire.

It has been deemed desirable to get away from the mechanical means necessary for lifting the coal to the point or points from which it is distributed to the firebox. The Standard Stoker Company, Inc., in its present du Pont-Simplex stoker, drives the vertical screw, which does the lifting, through a series of gears which are boxed in in such a way as to protect them against coal dust or ashes. To insure them against excessive wear, adequate lubrication had to be provided in the gear case. The records of the operation of these stokers, in service during the past 18 months indicate that this has been successfully acomplished.

About a year ago the Standard Stoker Company was given an opportunity to apply two stokers on an Ohio River steamboat, the C. F. Richardson, which is a tow boat engaged in handling fleets of coal barges. The boilers and fireboxes of this steamer are typical of Western river practice, the grate area of each battery being approximately 13 ft. by 6 ft. It was determined to build these stokers without any vertical lifting screw. The screw conveyor, carrying coal from the bunker immediately in front of the boilers, was placed on an incline so that there was gradual elevation of the coal by it. At the firebox end, in the ash pit, it was given an abrupt upward turn which brought the outlet sufficiently high above the grate to permit distribution of the fuel. This stoker has been in successful operation since its installation and is running today. It is quite evident that this exact principle of carrying the conveyor on an incline would not be applicable to any except an abnormal locomotive, or one in which radical reconstruction of the boiler head would be made. If the incline is to be carried to a point where the coal will be sufficiently high to be distributed to the fire level, it would be necessary to have the conduit, for at least a portion of its length, protruding above the cab deck. The mud ring of the boiler would have to be arched to a degree that would probably be detrimental to adequate circulation at this point.

A Slug of Wet Coal Forced Out of the Vertical Conduit by the Action of the Horizontal Screw

The Standard Stoker Company has had in operation at its plant in Erie, Pa., since April 1, 1924, a stoker in which the elevation of the coal is accomplished without mechanism, and this stoker has been submitted to tests with all kinds of coal, to breakdown tests of every description, and has given successful results. In all locomotive applications of this new du Pont-Simplex type B stoker, no portion of the conveyor casing is brought above the cab floor, nor is it necessary to modify or alter in any way the boiler head or mud ring. The conveying screw terminates at a point just to the rear of the mud ring. From that point the conduit is continued by means of an elbow of gradual curvature, above

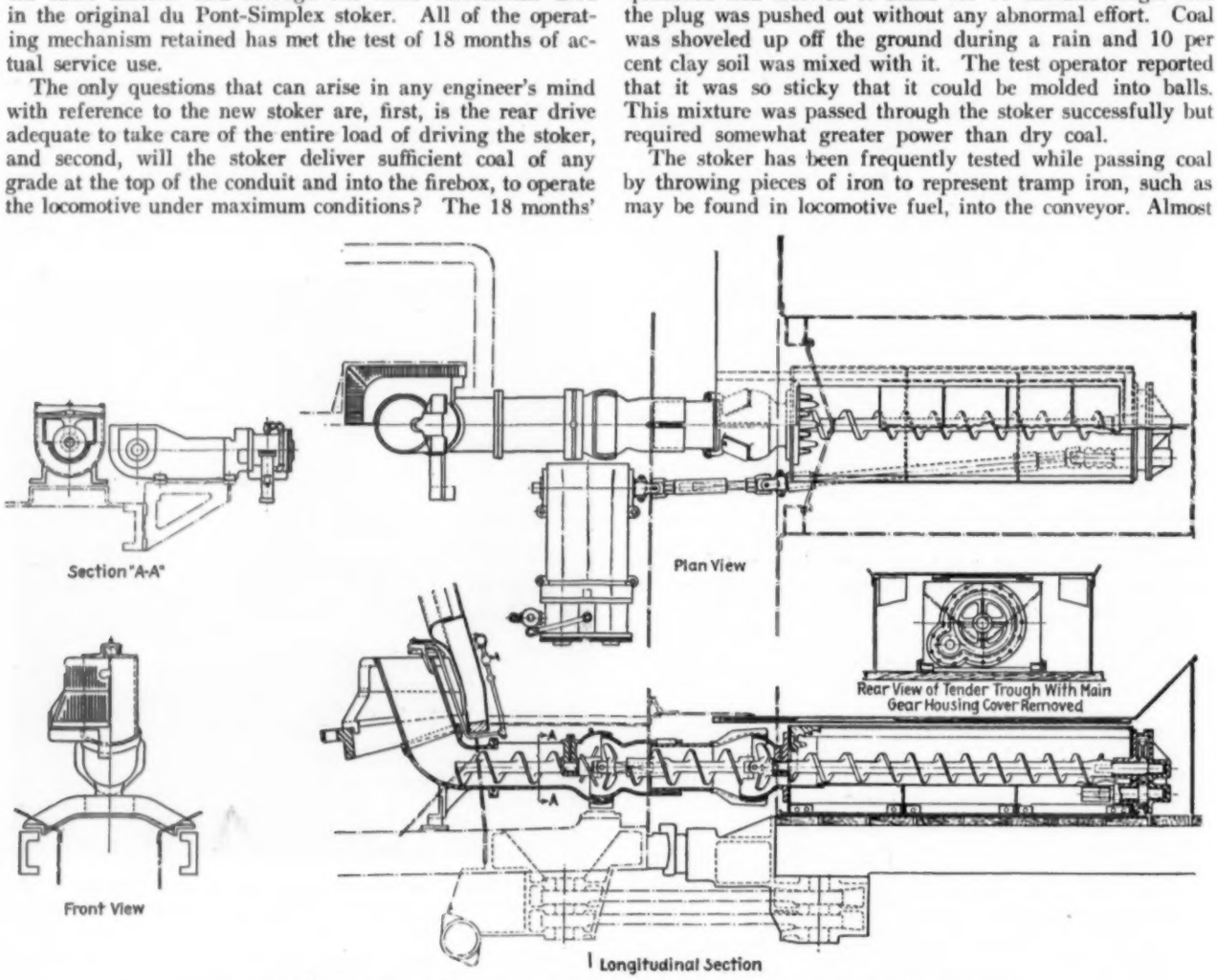
which is a straight conduit practically parallel with the door sheet of the firebox itself. It has been found by repeated tests that the coal can be successfully forced through the elbow and up the inclined conduit with less power than was required with the vertical screw. All driving gears and moving parts forward of the boiler head have been eliminated and the entire stoker is driven from the rear end in exactly the same manner and through the same mechanism used in the original du Pont-Simplex stoker. All of the operating mechanism retained has met the test of 18 months of actual service use.

The only questions that can arise in any engineer's mind with reference to the new stoker are, first, is the rear drive adequate to take care of the entire load of driving the stoker, and second, will the stoker deliver sufficient coal of any grade at the top of the conduit and into the firebox, to operate the locomotive under maximum conditions? The 18 months' service of the du Pont-Simplex stokers, during which they have repeatedly withstood the breakdown tests from tramp iron in the coal, answers the first question. As to the second, a brief summary of a few of the tests which have been made at Erie, Pa., by the engineers of the Standard Stoker Company will give the answer. The stoker running at a rate of speed that is not abnormal, has delivered successfully all grades of coal at rates in excess of 12 short tons an hour. Run-of-mine coal and slack, wet and dry, have been passed through at these rates with a consumption of power less than when the vertical screw was used. The height to which the coal has been lifted, in these and other tests, is in excess of that usually required in any locomotive application. The limitation on this height is not known as the coal has been passed through the highest vertical which has been tried, and it was at least a foot longer than will be necessary. The accompanying photograph shows the front end of the stoker, with the protective grate omitted, after wet coal had been passed through it. This wet coal tends to cohere under compression and the slug of coal standing over a foot above the top of the vertical is an indication of what the stoker will do in this respect.

The stoker has been filled with dry coal half way up the vertical by running. The remaining portion of the vertical was filled with incandescent coal from an adjacent boiler, mingled with green, dry coal, and then the whole allowed to stand for ½ hr. to permit the coal to coke. It was then quenched and allowed to stand for 15 minutes longer and the plug was pushed out without any abnormal effort. Coal was shoveled up off the ground during a rain and 10 per cent clay soil was mixed with it. The test operator reported that it was so sticky that it could be molded into balls. This mixture was passed through the stoker successfully but required somewhat greater power than dry coal.

The stoker has been frequently tested while passing coal by throwing pieces of iron to represent tramp iron, such as may be found in locomotive fuel, into the conveyor. Almost without exception, these pieces have been passed through without any stalling or jamming. In the few cases where jamming did occur, a few turns of the engine in reverse loosened the jam and the pieces went through. In this connection it is said that this stoker may be run in reverse as long as is desired and the entire vertical and horizontal conduits can be cleaned out by this reverse running and the coal forced back into the tender.

The question naturally arises as to the effect on the stoker of wear of the screw conveyor in operation. The horizontal screw is carried at its front end on the wall of the conduit, and this is true of the original du Pont-Simplex Stoker which has been in service for 18 months. In this latter case, the uniform report of inspectors and service men is that there is no material wear on the edges of the conveyor flight, this evidently being due to the supporting and lubricating action of coal passing through. The same fact has been demonstrated in the operation of the stoker of the steamboat, C. F. Richardson. The horizontal screw was deliberately turned down 1½ in. on its diameter, and when



Du Pont-Simplex Type B Stoker from Which the Elevating Screw Has Been Eliminated

tested in this condition it was found that its capacity was very slightly reduced. It took slightly more power, but the difference was not in excess of 10 per cent in either direction.

In the type B stoker, the rugged, slow-moving, two-cylinder engine of the du Pont-Simplex stoker is retained.

During the past year the Standard Stoker Company, has substituted manganese steel for ordinary grades of steel in the universal joints of the rear end drive. Manganese steel has remarkable properties for resisting abrasion, and these universal joints are expected to run without material wear, and with almost complete neglect of lubrication. The forward hanging bearing carrying the rear end of the forward horizontal conveyor screw, which takes the thrust of this screw, is provided with manganese steel wearing surfaces, upon which it has been found by experience, bituminous coal dust has lubricating action.

Train Speeds in America

By A. L. Bostwick

TEN OR FIFTEEN years ago it was possible to travel from New York to Chicago in 18 hours; to St. Louis in 24; to Buffalo in 8¼, and to Pittsburgh in less than 9. The speediest trains in the world ran from Camden, N. J., to Atlantic City, making 66.6 miles an hour. Expresses on the Reading-Jersey Central route were timed at a mile a minute from Jersey City to the suburbs of Philadelphia.

For various economic reasons these "high spots" have been cut down. The fastest schedules have been lengthened. On the other hand, many slow trains have been accelerated, and the *number* of fast trains has increased. All in all, therefore, there has been considerable progress in furnishing quick transportation by rail, even without the hair-raising performances of some of the "flyers" in days gone by.

The United States still leads the world in long-distance high-speed trains. First in performance comes the New York Central's "Twentieth Century Limited," covering the 968 miles between New York and Chicago at 48.4 miles an hour, and always running in two or more sections. The double-column shows the more notable long-distance trains.

It is clear that the speediest long-distance trains are confined to two important railway systems and run between the Atlantic seaboard and the large cities of the Middle West. In fact there is only one long-distance train in the 40-mile-an-hour class that operates outside this territory—the Illinois Central's "Panama Limited," covering the 921 miles between Chicago and New Orleans at a speed fractionally above the 40-mile mark.

The only other railroad to operate a long-distance train at 40 miles an hour or better is the Baltimore & Ohio, whose "Capitol Limited" makes slightly over that rate between Chicago and Washington, 786 miles, and from Chicago to New York, 1,014 miles.

For medium distances—200 to 500 miles—some of the best records are made by long-distance trains over portions of their routes. In a number of instances schedules of 50 miles an hour are maintained between cities 200 miles or more apart. The table below does not take such cases into consideration; it lists a few of the principal trains covering medium distances only.

From Harmon, N. Y., to Buffalo, or almost the entire distance from New York, the Empire State Express averages 50 miles an hour.

The fastest trains in this country belong in the "short-distance" class, and operate between Camden, N. J., and Atlantic City. The Reading covers the distance of 55.5 miles in 54 minutes, at 61.7 miles an hour; the Pennsylvania's average, over a slightly longer line, is 60.7. These runs, while slower than formerly, are still among the fastest in the world.

On the Reading-Jersey Central line between New York and Philadelphia at least one train runs from Bound Brook, N. J., to Jenkintown, Pa., 49.2 miles, in 49 minutes. This and the Atlantic City runs furnish the only instances that can be discovered where American trains are scheduled at mile-a-minute speeds between station stops.

The Reading-Jersey Central two-hour New York-Philadelphia expresses are the only trains in the United States, excepting those on the Camden-Atlantic City routes, that are timed at 50 miles or more an hour *for their entire run.* Jersey City is the real terminus for these trains, and the 90 miles between this point and Philadelphia is covered in 108 minutes. As has been noted already, some very high speeds are made over portions of this route; in some cases over 55 miles an hour.

In one respect at least, Philadelphia fails to live up to its reputation; the city is served by the fastest trains in the United States.

Speeds of 50 miles an hour between regular stops are common on the main lines of the New York Central, the Pennsylvania and the Reading-Jersey Central. One can travel at this rate over such stretches as between Albany and Buffalo, Newark and Philadelphia, Chicago and Fort Wayne, Harrisburg and Altoona, Syracuse and Rochester. On other lines, 50-mile schedules are rare. West of the Mississippi, and in the South, there are few, if any at all.

In New England, the only runs at this rate are performed by the New Haven's "Merchants" and "Knickerbocker" limiteds, westbound, which cover the 62.2 miles between Providence and New London at 51.1 miles an hour. The Lehigh Valley's "Black Diamond Express" runs from Buffalo to Rochester Junction, N. Y., 68.1 miles, at 52.4 miles an

Railroad	Train	Run	Distance miles	Hours	Minutes	Speed, miles per hour
N. Y. Central	20th Century Limited	New York-Chicago	968	20	0	48.4
N. Y. Central	Detroiter	Detroit to New York	675	14	20	47.1
N. Y. Central	Detroiter	New York to Detroit	675	14	45	45.8
N. Y. Central	Hudson River Limited	Cincinnati to New York	884	19	25	45.5
Pennsylvania	Broadway Limited	New York-Chicago	908	20	0	45.4
N. Y. Central	5th Avenue Special	Chicago to New York	968	21	57	44.0
N. Y. Central	Southwestern Limited	New York to St. Louis	1,158	26	25	43.8
Pennsylvania	Wash.-Broadway Limited	Washington-Chicago	826	19	0	43.5
N. Y. Central	Wolverine	New York-Chicago	958	22	0	43.5
N. Y. Central	Michigan Central Limited	Chicago to New York	958	22	15	43.1
N. Y. Central	Knickerbocker Special	St. Louis to New York	1,158	27	15	42.5
Pennsylvania	New Yorker	St. Louis to New York	1,053	24	50	42.4

Railroad	Train	Run	Distance miles	Hours	Minutes	Speed, miles per hour
N. Y. Central	Empire State Express	New York to Buffalo	439	9	0	48.7
Pennsylvania	No. 114 and No. 186	Washington to New York	226	4	55	46.0
Pennsylvania	Pittsburgher	New York to Pittsburgh	440	9	35	45.9
N. Y., N. H. & H.	Merchants and Knickerbocker Limiteds	New York-Boston	229	5	10	44.3

hour. The "Capitol Limited" on the Baltimore & Ohio, makes 50.5 miles an hour westbound over the 116.9-mile stretch between Garrett and Gary, Ind. Train No. 19 on the Big Four (New York Central Lines) runs from Hillsboro to Granite City, Ill., near St. Louis, 48.9 miles, at 52.4 miles an hour. On the main line of the Illinois Central, 50-mile schedules are in effect over a few short stretches south of Chicago.

The fastest run of over 100 miles on any American railroad is performed on the Canadian section of the Michigan Central (New York Central Lines) between St. Thomas and Windsor, Ont., by the "Detroiter," westbound, which runs the distance of 109.6 miles in 113 minutes, at a speed of 58.2 miles an hour. From Buffalo to Windsor, 233 miles, this train averages 52.4 miles an hour, including one 5-minute stop. Several other trains on this same stretch make records almost as good.

West and south from Chicago there are several fast runs, particularly that of the Illinois Central's winter train, the "Floridan," which reaches Carbondale, Ill., 306.7 miles from Chicago, in 6 hours 40 minutes, the speed being 46 miles an hour. On parts of the route it approaches 50. The "Panama Limited" on the same stretch does almost as well.

Fast time is made on several lines between Chicago and the Mississippi. The Rock Island's "Rocky Mountain Limited" averages 44.8 miles an hour on the 179.3-mile stretch between Chicago and Moline, Ill. The Chicago & Alton's train No. 79 runs from Chicago to St. Louis, 283.9 miles, at a speed of 43.7 miles an hour, and reaches Springfield, Ill., in four hours, or 46.3 miles an hour for the 185.1 miles.

The South has very few trains scheduled at speeds as high as 40 miles an hour for any considerable distance. The Illinois Central's "Panama Limited" is the fastest train serving this territory.

West of the Missouri, the best run of over 500 miles is performed by the Union Pacific's "Overland Limited," eastbound, running 507 miles from Cheyenne, Wyo., to Omaha at 42 miles an hour. Fast time is made on portions of several railroads running between Omaha and Denver, particularly when summer schedules are in effect. At present, the Rock Island's "Rocky Mountain Limited" runs from Limon, Col., to Phillipsburg, Kan., 247 miles, at 44.2 miles an hour.

In the northwest, Oregon Short Line (U. P.) train No. 5, having no through passenger connections, runs 489 miles from Green River, Wyo., to Nampa, Idaho, at the rate of 39.6 miles an hour.

The fastest trains on the Pacific Coast are Southern Pacific Nos. 71 and 72, making 37.3 miles an hour between San Francisco and Los Angeles over the coast route, 475 miles.

Of the so-called "transcontinental" trains, the eastbound "Sunset Limited" of the Southern Pacific makes the highest speed, 35.5 miles an hour over the 1,992 miles from Los Angeles to Avondale, La., across the river from New Orleans.

"IMPORTED" PERSONAL DAMAGE SUITS against railroads may be brought to trial in Minnesota courts in cities entirely off the lines of defendant railroads. This follows from a recent decision of the Supreme Court of Minnesota to the effect that a railroad, although a "foreign" corporation, may be made defendant in a personal injury suit in any county in Minnesota if the tracks of the railroad extend into any part of the state. The court, however, gives the railroad defendant in such cases the right to ask for a change of venue to a city which is on the line of its road.

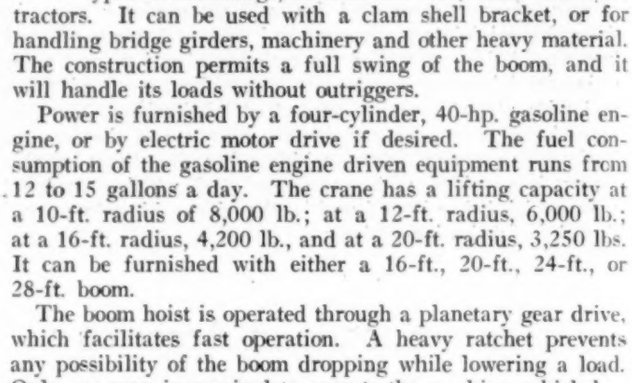
This decision is said not to conflict with the principle recently laid down by the United States Supreme Court in the so-called "Santa Fe case." In that case the court declared illegal the practice of "importing" personal injury cases into cities in states where a defendant railroad had no tracks and did not operate.

Crane Adaptable to Variety of Service

THE UNIVERSAL CRANE COMPANY, Cleveland, Ohio, is manufacturing a crane that can be adapted to various types of mountings, such as flat cars, motor trucks or tractors. It can be used with a clam shell bracket, or for handling bridge girders, machinery and other heavy material. The construction permits a full swing of the boom, and it will handle its loads without outriggers.

Power is furnished by a four-cylinder, 40-hp. gasoline engine, or by electric motor drive if desired. The fuel consumption of the gasoline engine driven equipment runs from 12 to 15 gallons a day. The crane has a lifting capacity at a 10-ft. radius of 8,000 lb.; at a 12-ft. radius, 6,000 lb.; at a 16-ft. radius, 4,200 lb., and at a 20-ft. radius, 3,250 lbs. It can be furnished with either a 16-ft., 20-ft., 24-ft., or 28-ft. boom.

The boom hoist is operated through a planetary gear drive, which facilitates fast operation. A heavy ratchet prevents any possibility of the boom dropping while lowering a load. Only one man is required to operate the machine, which has



Power Is Furnished for This Crane by a 40-hp. Gasoline Engine

a swing speed of 5½ r. p. m. The hoist line can carry a 3,750-lb. load at a speed of 125 ft. per min.

All gears are constructed of high carbon steel and have cut teeth. The clutches are interchangeable, lined with thermoid and can be instantly adjusted. The bushings are made of high grade bearing bronze, are interchangeable and easily accessible. The drums are scored and have an extra large clutch and break surface to assure smooth and safe operation. The Alemite grease system of lubrication is used on the bearings.

The hoist and holding drum shafts operate at a speed of 50 r. p. m. and the swing and boom hoist shafts rotate at a speed of 22 r. p. m. The weight of the crane ready to mount is approximately 12,000 lbs.

THE FIRST ANNUAL MEETING of the Southeast Shippers' Regional Advisory Board is to be held on June 10 at the Hotel Ansley, Atlanta, Ga. In the evening there will be a banquet at the Hotel Ansley at which James A. Emery, of Washington, general counsel of the National Association of Manufacturers, will speak on "Economic Questions and Political Answers." Other speakers will be F. W. Shealy, chairman of the South Carolina Railroad Commission; Lincoln Green, Southern Railway, and M. J. Gormley, Car Service Division, A. R. A.

Can the Grade Crossing Problem Be Solved?*

Analysis Shows That Present Basis for Dividing Cost of Elimination Is Not Equitable

By Robert H. Ford
Assistant Chief Engineer, Chicago, Rock Island & Pacific

GRADE crossings between railways and highways have been the subject of more or less consideration since the railways became the principal agency of transportation. During the early period of railway construction, there was a great demand throughout the country for railways, as the primary requisite for territorial development, it being universally recognized that if crossings at highway grades must be separated, it would greatly delay the desired railway extensions, or in many cases make it impossible to finance the enterprise because of the added cost. These and similar considerations had much to do with the willingness of public authorities to permit and encourage the railways to cross the public highways at grade.

In the formative period of railway activity, the element of danger was not so pronounced. For a long time, the locomotive, puffing along through the country, was a comparative novelty. Trains were relatively few and moved at slower speed. The country was undeveloped, and the time element was not a very important one. Speed, in the sense that it is used to-day, was unknown.

Closely following the construction of the railways, marched the home-seeker and the manufacturer, with their attendant train of industrial development. Rural communities turned into towns and cities, proportionately increasing the use of the highways by pedestrians and horse-drawn vehicular traffic; and in time increasing the number of trains crossing the highways. The increase in the highway crossing hazard for pedestrians and vehicles, found expression in the old familiar warning sign. Beyond this, little was necessary except in isolated cases where for some local reason, it was essentially for the benefit of the interested parties that the grades be separated.

It is interesting to note that in these earlier cases, whether decided by the courts or by agreement between the municipality and the railway, that the burden of expense was divided between the locality and the railway crossing the highway under consideration. As public travel on the highways was predominantly local in character, the effect of this was to place the burden upon the users of the crossing, on the basis of their ability to pay for the improvement.

Early Legislation

While as early as 1874 the Connecticut legislature delivered itself to the effect that railway crossings at highways were becoming a nuisance and ought to be abolished, it remained for Massachusetts to pass the first piece of constructive legislation in the way of a general law for the abolition of grade crossings. This act was approved June 21, 1890 and is entitled "An Act to promote the abolition of grade crossings." The fundamental principle of this law was a recognition of the fact that the abolition was a distinct public improvement, and as such, was an asset to the state, as well as to the municipality and the railways, and that the cost should be borne by the parties benefited thereby.

The expense of abolition was divided so as to assign 65 per cent to the railways, 25 per cent to the state and 10 per cent to the municipality. If more than one railway used the separated crossing, the railway proportion was divided between them. Where an electric line benefited by the transaction, it assumed 15 per cent of the railway proportion for maintenance. The railways assumed the cost of the bridge, and the municipality undertook the maintenance of the highway, drainage, etc. This law was framed in a spirit of friendly compromise and with due consideration for the rights and advantages to be gained by the affected parties, and under its beneficent application, grade crossing elimination gradually continued until Massachusetts is now the best protected of the states with respect to the crossings of railways and public highways.

Under the Massachusetts law, it might be said that *security* was the predominant feature to be obtained for the public (represented by the state and the municipality) and *convenience* for the railroads. In the many hearings and negotiations in connection with highway crossing elimination projects with which the writer was connected in the practical application of this law, these features stood out prominently as being essential advantages to be obtained by the public and the railroads.

It will be noted that this law was passed before the great avalanche of adverse railway legislation and before the railways were obliged to carry such a vast load of useless public expenditures as is now required. This is a fact which the public at large does not realize, but which forms such a drain on the resources of the railroads.

The development of the American railway system, as it gradually moved westward, was followed by the settlement and development of the country traversed. This in turn broadened the trade routes, and, following in rapid succession, came all forms of competitive industry with the result that local competition between neighboring communities was extended to more distant centers throughout the length and breadth of the country. This in turn has been reflected in a demand on the railroads, which has resulted in a service of the most complicated nature. Their trains must travel with heavier loads and at greater and longer maintained speeds, than heretofore, with all that this entails. It has increased in a greater degree the necessity for security to the users of the highways and convenience for the railways.

Prior to the advent of the automobile, the importance of grade separation was largely confined to the eastern states, and principally through New England. The topography of that section, as well as the original land divisions had much to do with this. The New England highways followed the old paths through the forests and along the streams, originally traversed by the pioneer and early settler, whereas in the West the highways follow definite lines in accordance with a pre-determined plan in sub-dividing public lands. This resulted in straighter and more definite highways with easier grades and better crossings in the West as compared with the crooked and oftentimes circuitous routes throughout New England and the East, which caused steeper grades, and many inconvenient and dangerous grade crossings. Consequently, grade crossing problems were a serious con-

*Abstract of a paper presented before the Western Society of Engineers at Chicago on May 19, 1924.

sideration in eastern territory long before they were in the West.

The Coming of the Motor Car

The vast application of the automobile within the past few years as the principal user of the public highways, has introduced new and unforeseen highway crossing problems. It has also materially affected and complicated the situation, both for the public and the railways, as well as for those who use the highways in motor transport. While the railways continue, as heretofore, to be the main transportation agency, they now have strong and healthy competition in the form of the automobile, the passenger bus and the auto truck, which use the public highways without cost, originally built by the public, which are now being improved and must ultimately be maintained by the taxpayer mainly for the automobile user. Meanwhile, all taxpayers including the railways are bearing this great burden of increasing cost, while the principal user, the automobilist, has gone free.

Automobile usage of the public highways may be divided into three classes:

1. The private machine, owned by the individual or family group, which has replaced the horse and buggy and the farm wagon, and to a large degree the pedestrian traffic of former days.
2. The passenger automobile or bus, carrying passengers for hire over the public highways.
3. The automobile truck, which conveys freight from one community to another in machines, often with a capacity comparable to the average railway freight car.

The advance of the automobile has been so rapid and universal that the public and the railroads find themselves completely befogged by the economic aspects of the problem. The railways are endeavoring to find some way to adjust themselves to this new form of competition, which is depleting their revenues and increasing their tax burdens, while the public at large is concerned with the new and greater problems of security which have been introduced, and the stupendous and little understood problem of taxation in the shape of interest on securities for improved highways, which must be built in order to provide for this new form of travel on the public highways. Meanwhile, the burden for annual maintenance and reconstruction, a problem as yet but little understood, is in the offing and must somehow be provided for. How this will be done as a practical business matter in fairness and equity to all concerned, is a difficult question. Evidently, the money must be raised by some form of taxation, but how it will be accomplished is hard to determine.

The Automobile Largely Responsible for Increase in Accidents

There exists a popular impression that the highway crossing is the principal source of accident on the highways. This is due in no small degree to the fact that whenever a highway accident occurs, it is usually demonstrated to the public that if the crossing had been eliminated, the accident would not have occurred, but scant mention is made of the enormous number of casualties and accidents which occur at other than highway crossings with railroads. For the six years from 1917 to 1923, the casualties at highway crossings increased 27.5 per cent, but during this same period, casualties at crossings to pedestrians and vehicles other than automobiles decreased 53.3 per cent. During the same period, automobile casualties increased 75 per cent.

A comparison between the total automobile casualties and those occurring at highway crossings, indicates that the greater percentage of the increase occurred *away from the highway crossings.* The automobile fatalities in 1922 totaled 9,184, but in 1923 they had increased to 14,000—equivalent to an increase of 52.4 per cent. During the same period, the grade crossing casualties had increased 25.5 per cent. It is evident from the foregoing that while the danger has greatly increased at the crossings, the greater danger is on the main highway away from the crossings.

While no sane person will question the desirability of grade crossing elimination, it is unfortunately a fact that those public authorities who are usually found to be the principal agitators for such improvements, are not as active in preventing new and additional grade crossings.

Reports to the Interstate Commerce Commission show that at the close of 1923 there were 252,362 highway grade crossings in the United States, an increase of 6.7 per cent since 1917, although during this period there was an actual decrease of 1.2 per cent in railway mileage. At the recent conference on grade crossings held in Chicago, it was reported that although 706 grade crossings had been eliminated in 1922, during the same year *4,000 new grade crossings were added.* When it is recalled that under the new order of public travel on the highways, each one of these additional crossings is a great menace to life, and that their cost must ultimately pass to the railway user, the seriousness of the situation is self-eveident.

On July 23, the United States Department of Agriculture issued a statement to the effect that:

"The agitation against *stopping highway traffic at railroad crossings* is having the effect of rapidly crystallizing public sentiment against all highway crossings; this will lead to the only right solution of the matter; that is the separation of grades."

It will be noted from the above, that what was originally considered as the principal advantage to be gained by the railroads, and upon which much of our highway legislation rests, has now passed to the public, or in other words, the advantage of security or safety is no longer the principal objective for the public, but that *convenience* has become a main essential as well. The force of this is also evident to anyone who observes the long lines of automobiles which so quickly accumulate on each side of crossings during the passage of a railway train. These facts must cause the thoughtful observer to question the old adage that it is the railways which benefit most through the separation of grades.

Enormous Cost of Crossing Elimination

Recent reports show the actual cost of eliminating 80 grade crossings in 11 states to have been $7,830,000. Among these were crossings in several large cities, to be eliminated in connection with track elevation projects. Excluding these, the cost would be $3,630,000 for 69 projects, making an average cost of $97,875 per grade crossing with the track elevation projects included, or $52,600 per crossing if these city projects were excluded. Considering the fact that the greater number of principal grade crossings are in the cities traversed by the railways, an average of $75,000 for all character of crossings is probably not too high, although several authorities have placed this at an even higher figure. Assuming, however, the average to be only $60,000 per crossing, the elimination of the 252,362 highway crossings in the United States, would cost the country $15,142,000,000.

The Pennsylvania Public Service Commission recently canvassed the states to determine the basis of railway cost divisions for grade crossing eliminations. Out of 24 states reported, 16 assess the railways 50 per cent or less, while 8 assess them in excess of 50 per cent. If we assume the division on the basis of 50 per cent, it would mean an expenditure of $7,571,000,000 by the railways to separate the grade crossings in this country.

The valuation of the railroads at the end of 1923 was estimated at $23,011,053,883. Consequently, the separation of the crossings would mean an addition of about 33 per cent to the entire capitalization of the railroads, or in other words, one third of their entire valuation would be a relatively non-productive investment, and this, be it

remembered, is according to terms which are considered as being the fair proportion for the railroads to pay.

It is the logical and necessary conclusion that this increase, in the shape of higher railroad rates, must in turn be passed to the shipper and passenger, a situation which is impractical on its face. Therefore, some other and more equitable way must be found, if the crossings are to be eliminated.

For the 10 year period from 1913 to 1923, the net operating income of the railroads increased 24 per cent. Meanwhile, taxes increased 184 per cent. A large part of this increase in taxation has been brought about by special assessment for public improvements, usually for the benefit of the relatively few, and not for the many, although coming within the term of "public benefits." When it is considered that in addition to this vast increase, the railways are further assessed 50 per cent or more for the cost of the highway separations, the absurdity of the situation from the standpoint of a fair division of cost is apparent.

The total railway operating income for 1923 was $6,356,890,737. The costs of operation were $4,943,928,145, leaving a net revenue of $1,412,962,592. After deducting $435,305,224 for taxes and rentals, there was left a net operating income of $977,657,368, equivalent to only 4.25 per cent on the investment. Now, an expenditure of $7,571,000,000 for grade crossings would in no way increase the earnings capacity of the railroads, whose net earnings last year were approximately 25 per cent less than the amount considered by the Interstate Commerce Commission as a fair return on their investment, or a sum much less than the average man is to-day obtaining for his savings.

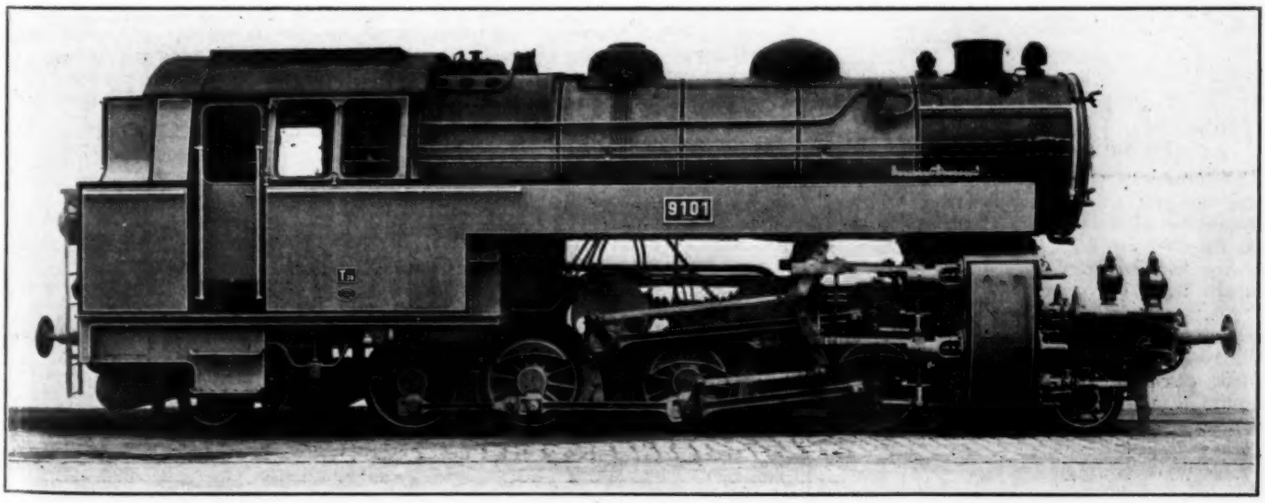
It will be readily seen from the foregoing that the participation of the railways in any general policy of grade crossing elimination on the basis of divisions of costs which have heretofore been assumed as equitable, is, because of changed conditions, now out of the question. The problem of railway participation in the general program of crossing elimination is not one of unwillingness to co-operate with the public authorities, or even one of finance. It is rather one of sheer impracticability.

Turn again to the question of the Massachusetts law. The principal railway affected, the Boston & Albany, was then earning in excess of 8 per cent. Taxes were more reasonable, and there was no burden of vast sums for non-productive expenditures now required by public enactments. In consequence, a reasonable division then is an unreasonable one now. The effect of this is to place the roads in the unpleasant situation of having to oppose these improvements, because of the inconsistency in the division of cost.

An eminent engineering authority, who has devoted much time and thought to the study of the highway crossing problem, states that with the changed conditions brought about by the automobile, the problem is no longer "the elimination of grade crossings," but has now become "the regulation for grade crossings," because of the wholesale changes and alterations which are now being advocated by various authorities and by unthinking persons who do not give more than a superficial review to the subject.

There is a popular fallacy that if the railroads would adopt some policy for grade crossing elimination, the savings that would result in reduction of claims from accidents, crossing watchmen, etc., would net a considerable saving, sufficient to warrant the change. It is true that some saving would accrue, but, except in a relatively few isolated cases, it will usually be found that the savings would be about 1 per cent on the new capital necessary to make the elimination. Who is willing to loan money to the railroads at this rate?

Grade crossing elimination is a problem not confronting the railroads, but the American business man, the shipper and the man on the street, in short, the American people. When they understand the situation, and the effect it must have on the increase in their daily expenses, which will be reflected directly and indirectly into every home, they will not be willing to provide the revenues for the purpose, either in the shape of increased rates on the railroad, or increased state or municipal taxes. Rather, I believe, they will insist that all users of these improved highways must pay in proportion to the benefits which they obtain. The solution of the grade crossing problem in America is at best difficult and complex, whether viewed from the standpoint of elimination, protection or regulation, but clearly the first step is to reach a common understanding of its economic aspects between the users, either directly, or through regulatory and other authorities to whom the tax payers must ultimately look for relief.



Combined Adhesion and Rack Locomotive Built by A. Borsig for the German State Railways

Tank locomotive, 2-8-2 type, with double compound engine for operation on level tracks or on heavy grades equipped with Abt type racks. Will negotiate curves of 435 ft. radius without difficulty. The lower cylinders operate the adhesion driving wheels while the upper cylinders are connected through two gear shafts, having a ratio of two and a half to one, and drive the rack sprocket wheels. Weight in working order, 208,000 lbs., with 177,700 lb. on the drivers. Cylinders 20½ in. by 19-11/16 in. Boiler pressure 200 lb. Driving wheels 42⅛ in. diameter.

General News Department

A first-aid and mine rescue car has been provided to serve all the mines located along the Alaska Railroad in the territory of Alaska. Secretary Work of the Interior Department announces that the car has been turned over to the Bureau of Mines, equipped with oxygen-breathing apparatus, oxygen tanks, first-aid material and fire-fighting equipment, in addition to living quarters for the men in charge.

Electric Locomotive Development

"The Development of the Electric Locomotive" is the title of a paper presented before the Society of Mechanical Engineers at Cleveland, Ohio, on May 29, 1924, by A. H. Armstrong, General Electric Company. The paper includes specific information on twin geared and gearless electric locomotives and presents the reasons for these types being favored by the General Electric Company for heavy traction service.

Western Society of Engineers Elects Officers

The Western Society of Engineers, Chicago, has elected the following officers for the ensuing year: President, E. T. Howson, western editor, *Railway Age*, Chicago; first vice-president, Homer E. Niesz, manager, industrial relations, Commonwealth Edison Company, Chicago; second vice-president, F. E. Morrow, assistant chief engineer, Chicago & Western Indiana, Chicago; third vice-president, Major Rufus W. Putnam, district engineer, Corps of Engineers, United States Army, Chicago; treasurer, George W. Hand, assistant to president, Chicago & North Western, Chicago.

New York Railroad Club to Hold Large Sports Outing

Arrangements have been made by the New York Railroad Club to hold a large sports outing on Thursday, July 10, at the Travers Island Country Club House of the New York Athletic Club. A full day's program of sports such as boxing bouts, golf and tennis, as well as other entertainments have been provided for. A special train on the New York, New Haven & Hartford will leave New York at 12:00 noon, daylight saving time, returning at 10.30 p. m. The president's band of the Erie Railroad will accompany the train. In the way of sports and entertainments, there will be a baseball game between the New York Athletic Club Team and some other fast team, six snappy bouts of three rounds each, a balloon race, quoits, tennis, swimming and a clambake. For those who desire to play, there will be a golf tournament in the morning at the various clubs in the vicinity including the Pelham, Siwanoy, Wykagyle and Wing Foot golf clubs.

A Railroad Proud of Its Employees

The president of the Central of Georgia, who advertises in the local newspapers throughout the road's territory every few weeks, devotes his latest manifesto to the employees, saying nothing, at this time, on the stock subjects of railroad advertisements—such as fine coaches, fast locomotives, solid roadbed and reliable signals. He says, in part:

"Any person who is employed by the Central of Georgia must measure up to high standards physically, mentally and morally. All rules are impartially enforced by those charged with maintaining discipline, and many men are now in other employment because of infractions of the regulations that came to the attention of the alert supervisory forces. Not every man who enters railway service remains there. Those who do continue in our employ are picked men of a high type of manhood. People may ship their property with the assurance that it will receive correct and careful handling. The traveler may entrust himself and the members of his family to the care of railway employees with entire confidence that everything humanly possible is being done to prevent even the slightest injury. . . .

"The Central of Georgia is proud of the fine personnel of its employees. Its officers have been recruited from the ranks and they understand the conditions under which the men work. Our employees have contributed largely toward establishing the reputation of this railway as a dependable transportation utility. The management is glad of this opportunity to inform the public how its employees are selected and trained. . . . Constructive criticism and suggestions are invited."

C. P. R. Considers Possibility of Electrification in the Rockies

President E. W. Beatty, of the Canadian Pacific Railway, who with four or five of the road's directors, is making the annual tour of inspection of the system, announced in Vancouver that serious thought was being given to electrification of the mountain division of that road. Experts are making a careful examination of the possibilities of such a change in the Rockies, said Mr. Beatty, and when their report is complete it will remain with the heads of the road to consider whether or not the cost would justify the change. He believes that electrification might greatly reduce the cost of haulage through the mountains and he made it clear that his road had its eye on the steadily increasing westward flow of grain from Alberta to Vancouver and also on the fact that the Canadian National in its more northerly pass through the mountains has very much easier gradients than the C. P. R. Reference was made to the results obtained by electrification on the Chicago, Milwaukee & St. Paul.

Passenger Locomotive Performance on the S. P.

Four sections of the Sunset Limited and six sections of the Golden State Limited, making ten trains in all, left Los Angeles on May 22, 1924, each train being hauled by one of the Southern Pacific's new mountain type locomotives all the way through from Los Angeles to El Paso, distance 815 miles. No trouble was experienced, and all ten of these trains arrived at El Paso on time.

On the same day the Overland Limited, consisting of three sections, left San Francisco carrying passengers on the first day of the summer tourist rate excursions; each section being hauled by one of the new mountain type locomotives, and every section arrived on time at Ogden; and furthermore, arrived on time at Omaha, the terminus of U. P. R. R. Co. and at Chicago, the destination.

The Overland Limited, consisting of twelve cars, is now hauled regularly over the Sierra Nevada mountains, with maximum grades of 116 feet to the mile, with one of the Southern Pacific's new freight locomotives (2-10-2) with no helper locomotive.

Western Railway Club Elects Officers

The annual meeting of the Western Railway Club was held in Chicago on May 19, at which time the following officers were elected: President, F. H. Hammill, general manager, Chicago & North Western; first vice-president, C. G. Juneau, master car builder, Chicago, Milwaukee & St. Paul; second vice-president, W. G. Black, superintendent of motive power, New York, Chicago & St. Louis; secretary-treasurer, Bruce V. Crandall, editor, Chicago & North Western Railway Magazine.

The directors of the Western Railway Club, including those newly elected, are as follows: Hal S. Ray, director of personnel and public relations, Chicago, Rock Island & Pacific; E. J. Brennan, superintendent of motive power, Chicago Great Western; W. F. Thiehoff, general manager, Chicago, Burlington & Quincy; O. S. Jackson, superintendent of motive power and machinery, Union Pacific; L. S. Kinnaird, superintendent of motive power, Chicago & Eastern Illinois; and A. La Mar, master mechanic, Pennsylvania.

The closing event of the year was the annual dinner held at the Edgewater Beach Hotel, Chicago, on Saturday evening, May 24. Hal S. Ray, president of the club, introduced the speaker of the evening, F. W. Sargent, vice-president and general counsel of the Chicago & North Western.

Department of Commerce Service for Exporters of Railway Material

The Commercial Intelligence Division of the Department of Commerce has announced a series of new Trade Lists of interest to exporters of railway material. These lists contain the names of importers and dealers in railway material in foreign countries and may be had without charge from any of the district or co-operative offices of the Bureau of Foreign and Domestic Commerce or from Washington.

In addition to the periodic compilation of Trade Lists of foreign dealers in railway materials, the division has on file detailed sales data on more than 100,000 foreign firms and individuals with which American firms do business. American trade representatives in every part of the world co-operate with the division in keeping this data up to date.

When applying for the new trade lists, manufacturers should give the number and title as follows:

GAGE, MILEAGE AND ROLLING STOCK INCLUDED WITH LISTS

Barbados, Jamaica, Trinidad and Curacao	LA-39007
Costa Rica	LA-23027
Cuba	LA-31008-A
Dominican Republic	LA-32020
Guatemala	LA-24036
Honduras	LA-25021
Martinique and Guadeloupe	LA-35014
Nicaragua	LA-27019
Panama	LA-28023
Porto Rico	LA-38016
Salvador	LA-29010-A
Virgin Islands, Bahama Islands, Antigua and St. Kitts	LA-39008
British Honduras	LA-26008

Canadian Senate Conservatives Would "Investigate" C. N. R.

Once more the issue of public ownership of the Canadian National has come before the Senate of Canada and, before the session is concluded, that system is destined to receive some rough handling. Late last week Senator William H. Bennett (Conservative) moved the following resolution which he spoke on most of the afternoon and evening and discussion of which was adjourned to late this week by Senator Raoul Dandurand, leader of the Liberal minority (the government party in the Senate):

(1) That a special committee of this House be appointed to inquire into and to report from time to time upon:

(a) The statements and charges in regard to administration of the Canadian Government Merchant Marine and Canadian National Railways made by Senator Taylor.

(b) The acquisition of the property in Paris, known as the "Scribe Hotel" and all dealings, transactions and payments relating thereto.

(c) The employment or engagement of one Aronovici by the National Railways, the services performed by him, if any, and the commission, salary and other remuneration paid to him.

(d) The system of the purchase of supplies for the Canadian National.

(e) The deposit by and withdrawal of the railway of $1,000,000 of public funds in or about the month of May, 1923, with the Home Bank of Canada.

(f) All questions, matters and things, which in the discretion of the committee are incidental to the foregoing.

(g) That the inquiry shall be subject to the condition that no matter of operation or of management taking place in the year 1924, inquiry into which would in the opinion of the management of the said system be prejudicial to the property of the system or its proper operation, shall be made subject of investigation.

(h) That the said committee be empowered to take evidence under oath and to send for any persons, papers and records.

On the following day the Canadian National branch line bills came before the Senate and after a lively debate thirteen of the bills received second reading and were passed on to the Senate committee named to deal with them. Before that committee it is proposed to call Sir Henry Thornton, president of the C. N. R., and other officials of the system to answer questions as to details of costs and prospects traffic.

Speaking on these bills, Sir James Lougheed, leader of the Conservative majority in the Senate, said, "I am most anxious to know if the National Railways management has given consideration to the all-important question of the financial result? It is unnecessary for me to point out that no other policy that can be entered upon will be so disastrous to public ownership as the policy of indiscriminate expenditure on building branches, irrespective of the all-important question of the earning power of those branches. I would suggest that the leader of the government in the Senate, Hon. Mr. Dandurand, explain to this House the principles upon which the government has committed itself to this very important undertaking, because the estimated cost is only a small proportion of what it will ultimately involve." Sir James declared that the action of the Senate last year in throwing out the omnibus bill on these branch lines had been fully justified this year by the government submitting the program in as many bills as there were branches proposed to be built.

Senator Dandurand, for the government, read a lengthy statement from Sir Henry Thornton which contained most of the reasons given by the latter in his statement to the House Committee on Railways for the building of the various lines, and Senator Dandurand added, "This is the basis or justification of the Canadian National Railways executive in presenting this proposed development. It will be for the officials of that system, who have studied the whole situation and surveyed the ground, to give the Senate committee their first-hand information."

Sir James Lougheed replied by stating, "My honorable friend assumes no responsibility himself; but assumes to divest the government of the entire responsibility of this important measure, and lays before the Senate a letter written by the president of the road of a very general character, as to the policy involved, and states to this chamber that this is the policy upon which the government of Canada proposes to expend the enormous sum of money which must eventually be spent upon the building of these branches."

Sir George E. Foster, another Conservative member, said near the end of his speech: "With reference to some of these lines, my present presumption is that they are very dangerous. Some of them are calculated, to my mind, to be a continuous drain upon the system itself. I want to see a very strict discrimination with regard to those different lines. Instead of all being put *en bloc*, as they were last year, the concession has been made by the government that we get these one after another, and take up each one by itself. Unless there is information coming of which I do not know now, there are some lines which I consider dangerous, unnecessary and simply perpetuating an old system of political patronage which has been inherent in this country from the first, and which still persists, but which I should hope, as we gain in sense and intelligence, will be relegated to the discard in the general interest of a great national system."

Pennsylvania Tries Radio Telegraph

Extensive tests, to determine the availability of the radio telegraph for transmitting railroad messages (other than train orders) in the event of extensive prostration of wires were conducted recently in co-operation between members of the American Radio Relay League, and the Pennsylvania Railroad. The tests, which covered the principal operating points on the Pennsylvania between the Atlantic Seaboard on the east, and the Mississippi River on the west, proved in the main highly successful. They were preceded by conferences, at Philadelphia, between A. L. Budlong of Hartford, Conn., representing the American Radio Relay League, and J. C. Johnson, general superintendent of telegraph, and other officers of his department.

For each of the four Regions of the railroad system an originating station in the League was selected to send the messages and receive the replies, as follows: Eastern Region—C. W. Lummis, Camden, station call 3-OE; Central Region—F. B. Westervelt, Pittsburgh, 8-V2; Northwestern Region—W. E. Schweitzer, Chicago, 9-AAW; Southwestern Region—C. W. Klenk, St. Louis, 9-AAV and H. J. Becker, St. Louis, 9-PW. The messages were all transmitted between 10:30 p. m., and 6:30 a. m., Central Standard Time.

In each Region several divisional points on the railroad were selected as the places to which messages should be sent and from which replies would be awaited. At each receiving point a radio telegraph station was designated by the American Radio Relay League, to receive the messages, and a representative was designated by the railroad to whom the messages should be delivered. While the greater number of the messages were between points in the same Region, the tests demonstrated the feasibility of transmitting messages from the most remote points on the lines to general headquarters at Philadelphia. Mr. Johnson expressed himself as being very much gratified with the results of the tests.

Freight Operating Statistics of Large Steam Roads—Selected Items for January, 1924

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line daily: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany....1924	394	266,758	285,169	29,719	4,901	68.4	249,465	98,294	116	29	20.0	...
1923	394	297,154	316,617	30,450	4,850	72.6	266,306	105,280	113	27	19.0	...
Boston & Maine....1924	2,455	528,853	580,431	45,574	11,156	69.9	566,621	230,605	354	120	25.3	47
1923	2,455	580,349	640,376	54,426	10,294	73.9	526,200	227,888	309	130	29.6	1
N. Y., New H. & Hartf...1924	1,974	485,328	509,745	31,018	11,456	70.6	573,446	241,234	285	83	22.6	7
1923	1,974	416,313	444,399	33,251	8,627	75.7	436,708	199,797	267	92	25.7	...
Great Lakes Region:												
Delaware & Hudson....1924	887	360,194	504,609	47,711	9,230	64.3	594,732	296,094	255	38	13.0	61
1923	886	350,564	493,901	38,577	7,653	65.7	510,561	267,626	227	67	22.9	4
Del., Lack. & Western...1924	993	528,615	652,805	100,332	15,601	67.3	865,296	385,770	274	82	23.0	6
1923	994	491,878	613,112	109,942	13,055	66.7	762,941	364,218	283	103	26.6	5
Erie (inc. Chic. & Erie)..1924	2,309	997,457	1,140,432	74,679	32,063	66.9	1,938,393	881,951	662	127	16.1	157
1923	2,309	1,200,448	1,373,088	60,843	38,961	73.4	2,317,815	1,183,038	551	205	27.1	...
Lehigh Valley 1924	1,317	607,172	672,913	82,752	15,905	64.7	952,943	443,240	434	100	18.7	61
1923	1,317	446,962	505,530	61,607	10,993	68.4	681,586	350,344	272	271	49.9	...
Michigan Central 1924	1,827	622,203	636,197	21,499	18,564	64.9	985,726	376,542	329	51	13.3	61
1923	1,827	649,377	665,061	25,641	19,164	67.5	1,054,254	454,024	290	93	24.3	8
New York Central....1924	6,469	2,272,442	2,558,057	175,709	72,157	61.5	4,437,026	1,939,762	1,274	397	23.7	341
1923	6,469	2,670,916	3,112,915	242,813	82,812	63.4	5,121,546	2,398,220	1,134	583	34.0	2
New York, Chic. & St. L..1924	1,670	750,701	759,833	4,195	19,081	65.2	1,049,947	424,026	247	66	21.0	21
1923	1,670	800,172	822,916	5,280	19,923	70.3	1,103,012	495,224	224	76	25.3	6
Pere Marquette 1924	2,227	391,515	412,483	8,985	8,935	65.4	518,114	234,791	190	25	11.7	18
1923	2,182	407,568	422,410	8,239	9,589	71.7	524,395	257,085	162	47	22.3	...
Pitts. & Lake Erie....1924	231	151,865	158,182	1,433	4,750	60.3	362,596	207,821	68	14	17.2	16
1923	231	177,957	182,113	1,627	5,790	65.5	430,750	256,741	59	16	21.4	...
Wabash 1924	2,456	698,099	742,020	15,169	18,735	70.3	1,016,703	436,903	309	51	14.3	6
1923	2,418	589,132	629,499	8,915	17,320	75.9	896,824	409,638	241	99	29.1	...
Central Eastern Region[1]:												
Baltimore & Ohio....1924	5,203	1,999,351	2,294,585	173,895	50,864	63.3	3,200,631	1,560,010	1,062	219	17.1	111
1923	5,212	2,245,577	2,610,635	174,390	59,088	65.8	3,682,156	1,870,250	1,017	287	22.0	10
Central of New Jersey....1924	693	290,067	318,879	41,214	6,434	58.9	437,980	211,800	238	41	14.7	30
1923	695	320,448	350,135	41,898	6,289	60.3	429,768	216,885	194	80	29.1	...
Chicago & Eastern Ill....1924	945	306,479	318,033	4,473	7,257	62.5	466,645	240,155	124	49	28.2	18
1923	945	284,855	295,849	4,242	7,047	64.4	444,860	231,669	105	67	38.8	2
Cleve., Cin., Chic. & St. L..1924	2,376	787,689	825,560	13,523	21,256	61.7	1,400,103	686,688	337	96	22.1	37
1923	2,377	797,337	834,385	7,873	22,988	65.8	1,462,041	736,724	302	144	32.3	...
Elgin, Joliet & Eastern[2]...1924	460	131,984	148,513	10,169	3,619	65.9	278,417	149,693	98	13	11.5	21
1923	460	146,191	163,982	12,580	4,384	66.3	329,204	200,329	82	18	18.1	...
Long Island 1924	393	43,209	52,238	7,685	532	60.5	31,337	11,950	40	13	24.9	2
1923	393	49,702	62,747	10,322	607	58.0	36,986	14,600	41	11	21.6	...
Pennsylvania System 1924	10,900	4,439,630	4,839,299	362,149	111,814	64.4	7,417,838	3,623,309	2,741	727	20.9	284
1923	10,884	4,871,036	5,419,620	456,076	120,390	64.6	8,077,706	4,097,977	2,497	812	24.5	...
Reading 1924	1,142	691,527	764,576	75,576	15,645	59.9	1,082,935	548,465	389	84	17.8	86
1923	1,142	806,003	925,560	109,342	19,431	65.4	1,332,393	727,442	335	79	19.1	...
Pocahontas Region:												
Chesapeake & Ohio....1924	2,553	998,999	1,100,564	32,253	26,847	57.3	2,100,206	1,143,770	425	98	18.7	17
1923	2,551	827,015	903,105	21,261	24,815	61.1	1,857,301	1,023,873	406	117	22.3	8
Norfolk & Western....1924	2,231	893,611	1,094,491	36,225	24,203	59.5	1,948,952	1,053,043	561	118	17.4	87
1923	2,228	869,519	1,038,217	40,631	20,524	62.6	1,583,682	874,601	518	183	26.1	50
Southern Region:												
Atlantic Coast Line....1924	4,869	812,598	817,629	13,795	18,877	64.1	981,486	380,980	365	63	14.7	27
1923	4,860	779,370	785,210	14,380	18,161	65.6	948,651	383,323	305	87	22.1	1
Central of Georgia....1924	1,907	299,661	301,788	4,539	6,220	71.6	325,363	144,962	127	20	13.4	5
1923	1,907	294,085	302,383	5,345	6,079	74.6	324,604	156,382	114	16	12.1	...
I. C. (inc. Y. & M. V.)..1924	6,196	2,065,280	2,081,742	47,299	51,223	62.5	3,320,701	1,532,102	800	112	12.3	18
1923	6,190	2,236,418	2,252,222	46,708	59,505	66.3	3,700,608	1,782,780	729	96	11.7	3
Louisville & Nashville....1924	5,026	1,737,569	1,857,976	70,465	30,554	63.6	1,980,590	975,220	590	120	16.9	9
1923	5,022	1,661,365	1,782,691	66,695	29,402	64.4	1,860,842	908,201	583	127	17.9	...
Seaboard Air Line....1924	3,548	535,271	564,184	8,378	12,159	64.2	677,614	255,131	216	43	16.5	...
1923	3,550	538,200	551,664	11,737	11,358	67.5	617,407	251,975	188	77	29.0	...
Southern Ry. 1924	6,820	1,429,785	1,466,783	32,735	31,592	67.8	1,677,879	716,568	846	124	12.8	1
1923	6,942	1,598,360	1,644,906	40,441	34,010	69.6	1,823,303	812,419	844	205	19.5	2
Northwestern Region:												
Chic. & North Western...1924	8,463	1,707,169	1,782,088	23,630	33,803	63.7	1,965,892	841,950	884	198	18.3	51
1923	8,416	1,841,367	1,898,927	24,204	37,187	64.4	2,180,629	988,112	805	256	24.1	...
Chic., Milw. & St. Paul..1924	10,987	1,786,670	1,852,069	73,906	40,124	65.7	2,300,293	1,049,645	949	167	14.9	97
1923	11,022	1,970,975	2,035,741	82,250	45,774	62.1	2,738,405	1,255,742	868	200	18.8	18
Chic., St. P., Minn & Om..1924	1,726	354,014	379,334	18,157	6,037	68.3	334,683	144,641	161	41	20.2	4
1923	1,726	358,472	382,119	20,132	6,368	68.0	360,542	162,884	150	56	27.2	...
Great Northern 1924	8,251	787,823	826,655	48,084	20,556	73.3	1,123,033	532,985	612	156	20.3	155
1923	8,256	1,090,008	1,127,575	55,108	25,722	63.8	1,584,487	749,022	553	215	28.0	9
M., St. P. & S. Ste. M..1924	4,374	518,350	531,732	6,361	10,916	70.0	562,305	256,685	284	60	17.3	18
1923	4,352	630,862	640,162	11,166	10,247	53.7	718,030	353,408	273	76	21.8	3
Northern Pacific 1924	6,415	816,227	856,301	47,472	22,009	74.5	1,219,569	583,162	559	163	22.5	90
1923	6,415	986,650	1,033,210	58,503	24,685	63.4	1,487,376	679,182	549	177	24.4	20
Oreg.-Wash. R. R. & Nav..1924	2,180	207,398	219,391	22,123	5,040	70.8	293,001	138,425	147	22	13.1	16
1923	2,185	262,515	296,743	45,246	5,791	63.3	357,070	161,291	141	40	21.9	...
Central Western Region:												
Atch., Top. & S. Fe....1924	9,855	1,487,426	1,569,885	78,724	39,774	64.9	2,263,099	848,467	808	160	16.6	200
1923	9,861	1,786,847	1,874,116	89,680	45,297	64.3	2,608,937	1,005,833	707	228	24.4	26
Chicago & Alton....1924	1,010	353,008	361,159	6,269	7,440	63.0	459,342	206,909	125	28	18.2	16
1923	1,010	381,027	387,271	6,855	8,117	64.4	505,956	240,944	117	34	22.7	1
Chic., Burl. & Quincy....1924	9,335	1,817,449	1,899,469	80,799	44,526	62.5	2,765,237	1,306,149	807	215	21.0	15
1923	9,326	1,940,861	2,021,579	90,943	50,192	62.1	3,156,117	1,511,216	778	223	22.3	7
Chic., Rock I. & Pacific...1924	7,635	1,456,816	1,490,358	18,335	29,807	66.3	1,626,849	676,770	508	223	30.5	37
1923	7,635	1,432,001	1,462,136	17,857	30,387	69.7	1,640,940	732,821	526	187	26.2	8
Denver & R. G. Wn....1924	2,599	275,191	342,574	59,981	5,717	65.9	352,101	170,361	232	92	28.4	42
1923	2,593	276,766	347,073	63,575	5,428	67.0	328,143	159,955	236	100	29.8	2
Oregon Short Line....1924	2,365	364,939	385,847	28,722	8,441	68.9	517,198	248,768	210	26	11.0	60
1923	2,367	439,638	466,649	31,520	9,039	61.1	586,186	265,755	180	60	25.1	8
Southern Pac. (Pac. Sys.).1924	6,952	1,146,326	1,288,099	224,083	32,349	65.7	1,889,183	765,778	597	198	24.9	34
1923	6,923	1,087,752	1,235,063	211,079	31,519	68.4	1,766,548	729,260	573	214	27.2	16
Union Pacific 1924	3,715	954,013	973,455	45,590	28,116	72.5	1,535,442	686,425	468	74	13.6	177
1923	3,709	1,133,411	1,156,895	67,511	29,706	69.1	1,637,230	706,473	385	175	31.3	....
Southwestern Region:												
Gulf, Colo. & Santa Fe...1924	1,897	248,926	258,346	6,408	7,082	68.6	400,445	181,181	127	25	16.3	19
1923	1,897	249,914	256,716	5,339	6,503	66.9	373,098	169,917	104	36	25.9	3
Missouri-Kansas-Texas 1924	1,801	250,263	250,359	5,127	7,489	63.1	420,826	169,702	147	54	26.7	67
1923	1,987	289,173	290,593	8,284	7,721	66.2	422,792	176,769	97	97	50.1	4
Mo.-Kans.-Tex. of Tex....1924	1,389	193,978	198,970	2,489	4,491	64.0	253,645	100,618	106	23	17.6	30
1923	1,739	225,290	229,975	4,304	4,291	66.5	240,993	99,386	74	72	49.5	3
Missouri Pacific 1924	7,305	1,265,741	1,275,393	41,357	31,230	68.7	1,785,703	827,254	443	168	27.5	2
1923	7,112	1,015,190	1,024,481	32,412	24,416	72.2	1,360,933	648,530	367	216	37.1	....
St. Louis-San Francisco...1924	4,683	832,475	844,860	15,872	15,578	65.1	888,462	379,928	435	72	14.2	33
1923	4,683	841,806	851,566	16,014	15,249	70.4	849,206	389,985	335	132	28.3	....
Southern Pacific Lines (in Tex. and La.)[3]....1924	3,710	660,685	662,785	4,302	13,775	65.6	812,947	350,053	235	57	19.4	17
1923	3,710	626,137	631,321	7,383	13,573	67.2	787,795	357,856	185	106	36.4	1
Texas & Pacific....1924	1,953	315,586	315,586	3,014	7,401	67.3	400,213	158,027	164	37	18.2	17
1923	1,953	276,938	277,065	4,753	7,017	71.1	369,606	148,373	96	112	53.7	1

[1] Formerly the Ohio-Indiana-Allegheny Region.

[2] No passenger-train service.

Compared with January, 1923, for Roads with Annual Operating Revenues above $25,000,000.

Region, road and year	Average number of freight cars on line daily: Home	Foreign	Total	Per cent unserviceable	Stored	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Passenger service: Train-miles	Passenger-train car-miles
New England Region:														
Boston & Albany 1924	2,038	5,320	7,358	3.6	....	935	368	20.1	431	31.4	8,049	215	315,105	2,054,704
1923	1,531	8,347	9,878	2.9	....	896	354	21.7	344	21.8	8,621	272	316,068	1,994,428
Boston & Maine 1924	14,456	15,714	30,170	12.0	....	1,071	436	20.7	247	17.1	3,030	179	840,940	4,368,749
1923	12,402	26,922	39,324	10.1	....	907	393	22.1	187	11,4	2,994	247	830,264	4,361,157
N. Y., New H. & Hart 1924	20,394	15,665	36,059	20.5	....	1,182	497	21.1	216	14.5	3,942	178	1,033,828	6,561,497
1923	16,250	33,233	49,483	16.4	....	1,049	480	23.2	130	7.4	3,265	250	1,017,012	6,325,268
Great Lakes Region:														
Delaware & Hudson 1924	9,542	5,525	15,067	6.3	....	1,651	822	32.1	634	30.7	10,763	223	197,644	1,009,328
1923	7,937	10,386	18,323	6.8	....	1,456	763	35.0	471	20.5	9,740	269	193,802	989,389
Del., Lack. & Western 1924	16,444	8,008	24,452	4.1	419	1,637	730	24.7	509	30.6	12,531	208	495,832	3,574,307
1923	12,737	12,269	25,006	4.3	30	1,551	740	27.9	470	25.3	11,819	262	489,609	3,326,199
Erie (inc. Chi. & Erie) 1924	33,578	18,810	52,388	6.3	9,964	1,943	884	27.5	543	29.5	12,319	156	675,249	5,102,242
1923	22,316	36,746	59,062	9.1	....	1,931	985	30.4	646	29.0	16,525	167	594,724	4,174,358
Lehigh Valley 1924	23,326	10,229	33,555	6.9	488	1,569	730	27.9	426	23.6	10,858	190	349,594	2,678,049
1923	20,709	20,574	41,283	5.3	375	1,525	784	31.9	274	12.6	8,582	244	349,603	2,630,590
Michigan Central 1924	13,532	16,682	30,214	6.2	3,633	1,584	605	20.3	402	30.5	6,650	158	605,680	5,194,242
1923	8,009	22,527	30,536	7.3	....	1,623	699	23.7	480	30.0	8,018	146	592,220	5,162,481
New York Central 1924	66,013	79,189	145,202	4.5	19,602	1,953	854	26.9	431	26.1	9,674	146	2,704,121	20,938,690
1923	57,591	108,861	166,452	9.7	....	1,918	898	29.0	465	25.3	11,960	155	2,634,970	20,263,157
N. Y., Chi. & St. L. 1924	10,351	12,570	22,921	4.8	....	1,399	565	22.2	597	41.2	8,193	163	214,885	1,047,772
1923	3,691	16,953	20,644	8.7	....	1,378	619	24.9	774	44.3	9,568	162	215,347	1,018,176
Pere Marquette 1924	9,729	11,628	21,357	3.3	1,696	1,323	600	26.3	355	20.6	3,401	160	267,307	1,365,475
1923	5,252	17,344	22,596	5.4	....	1,287	631	26.8	367	19.1	3,801	177	261,618	1,265,340
Pitts. & Lake Erie 1924	11,924	9,284	21,208	4.3	968	2,388	1,368	43.8	316	21.0	28,995	89	119,180	590,879
1923	7,966	12,560	20,526	21.3	....	2,421	1,443	44.3	403	13.9	35,820	87	116,271	594,880
Wabash 1924	11,892	13,778	25,670	2.6	184	1,456	626	23.3	549	33.5	5,738	188	509,249	2,829,832
1923	6,894	15,184	22,078	4.8	....	1,522	695	23.7	599	33.3	5,465	175	436,495	2,446,244
Central Eastern Region: [1]														
Baltimore & Ohio 1924	66,878	33,477	100,355	7.0	10,321	1,601	780	30.7	501	25.8	9,672	207	1,575,105	9,821,697
1923	47,770	58,199	105,969	9.4	....	1,640	833	31.7	569	27.3	11,575	211	1,428,350	8,930,102
Central of New Jersey 1924	17,739	11,121	28,860	6.4	1,977	1,510	730	32.9	237	12.2	9,853	207	344,107	1,613,303
1923	12,192	16,540	28,732	6.9	....	11,341	677	34.5	244	11.7	10,072	224	336,765	1,551,773
Chicago & Eastern Ill. 1924	13,191	4,806	17,997	14.3	1,040	1,523	784	33.1	430	20.8	8,197	224	250,816	1,482,659
1923	9,735	7,384	17,119	18.0	....	1,562	813	32.9	437	20.6	7,907	203	222,582	1,380,154
Cleve., Cin., Chi., & St. L. 1924	17,154	20,161	37,315	5.0	3,781	1,777	872	32.3	594	29.8	9,324	151	733,420	4,503,038
1923	9,654	25,640	35,294	8.2	....	1,834	924	32.0	673	31.9	10,000	157	737,196	4,436,031
Elgin, Joliet & Eastern [2] 1924	10,222	6,907	17,129	5.7	655	2,109	1,134	41.4	282	10.3	10,504	161	.....	.....
1923	8,303	6,022	14,325	10.4	....	2,252	1,370	45.7	451	14.9	14,057	151	.....	.....
Long Island 1924	1,704	4,309	6,013	1.2	....	725	277	22.5	64	4.7	980	380	200,961	1,157,241
1923	1,614	6,792	8,406	2.8	....	744	294	24.1	56	4.0	1,197	452	189,574	1,079,134
Pennsylvania System 1924	199,041	102,634	301,675	6.6	47,583	1,671	816	32.4	387	18.6	10,723	168	5,186,080	34,111,613
1923	152,475	137,899	290,374	7.0	4,446	1,658	841	34.0	455	20.7	12,146	175	5,183,298	34,751,727
Reading 1924	21,167	15,728	36,895	3.5	....	1,566	793	35.1	480	22.8	15,487	197	520,371	2,453,816
1923	14,055	26,050	40,105	3.5	....	1,653	903	37.4	585	23.9	20,541	204	508,679	2,338,025
Pocahontas Region:														
Chesapeake & Ohio 1924	29,128	9,962	39,090	5.3	2,525	2,102	1,145	42.6	944	38.7	14,453	143	476,516	2,729,680
1923	29,914	17,050	46,964	10.8	....	2,246	1,238	41.3	703	27.9	12,949	148	452,545	2,544,131
Norfolk & Western 1924	25,723	9,127	34,850	3.8	....	2,181	1,178	43.5	975	37.6	15,227	199	416,006	2,691,969
1923	25,027	11,820	36,847	5.0	....	1,956	1,080	42.6	766	28.7	12,664	222	397,727	2,448,208
Southern Region:														
Atlantic Coast Line 1924	21,985	14,358	36,343	3.7	....	1,208	469	20.2	338	26.1	2,524	140	937,215	7,098,062
1923	15,379	17,426	32,805	10.6	....	1,217	492	21.1	377	27.2	2,544	146	874,665	6,479,391
Central of Georgia 1924	4,491	4,284	8,775	5.4	....	1,086	484	23.3	533	31.9	2,452	178	362,943	2,153,293
1923	2,243	5,872	8,115	7.0	....	1,104	532	25.7	622	32.4	2,646	193	347,428	1,897,056
I. C. (inc. Y. & M. V.) 1924	43,256	23,226	66,482	3.9	....	1,608	742	29.9	743	39.8	7,977	169	1,603,856	9,560,698
1923	23,849	39,358	63,207	5.5	....	1,655	797	30.0	910	45.8	9,290	164	1,520,605	9,053,732
Louisville & Nashville 1924	42,003	18,539	60,542	5.8	83	1,140	561	31.9	520	25.6	6,259	200	1,056,473	6,218,866
1923	24,550	26,672	51,222	12.0	39	1,120	547	30.9	572	28.7	5,834	200	1,032,231	6,028,135
Seaboard Air Line 1924	10,458	9,301	19,759	4.8	....	1,220	460	21.0	417	30.9	2,320	170	694,252	4,566,364
1923	10,472	13,776	24,248	22.6	....	1,147	468	22.2	335	22.4	2,290	189	665,369	4,083,815
Southern Ry. 1924	38,233	24,119	62,352	2.9	....	1,174	501	22.7	371	24.1	3,389	211	1,355,955	8,512,782
1923	26,474	34,702	61,176	9.3	....	1,141	508	23.9	428	25.8	3,775	223	1,350,930	7,994,290
Northwestern Region:														
Chi. & North Western 1924	46,649	31,112	77,761	6.5	3,964	1,152	493	24.9	349	22.0	3,209	197	1,608,469	9,873,668
1923	32,207	38,992	71,199	6.4	4,065	1,184	537	26.6	448	26.2	3,787	196	1,575,107	9,688,181
Chi., Milw. & St. P. 1924	52,108	26,809	78,917	6.1	....	1,287	587	26.2	429	24.9	3,082	198	1,498,110	8,699,814
1923	34,851	38,335	73,186	7.9	....	1,389	637	27.4	553	32.5	3,675	190	1,484,888	8,870,375
Chi., St. P., Minn. & Om. 1924	3,571	10,422	13,993	7.5	2,079	945	409	24.0	333	20.4	2,703	198	311,539	1,775,197
1923	2,033	9,326	11,359	9.9	250	1,006	454	25.6	463	26.6	3,044	195	296,947	1,772,108
Great Northern 1924	45,743	8,235	53,978	5.2	....	1,425	677	25.9	319	16.7	2,084	193	987,801	5,722,717
1923	37,225	14,559	51,784	8.0	....	1,454	687	29.1	467	25.1	2,927	201	987,448	5,683,246
M., St. P., & S. Ste. M. 1924	18,812	5,958	24,770	5.7	245	1,085	495	23.5	334	20.3	1,893	159	443,981	2,300,132
1923	13,948	8,678	22,626	7.2	21	1,138	560	34.5	504	27.2	2,619	150	434,425	2,319,300
Northern Pacific 1924	35,188	10,859	46,047	5.2	2,850	1,494	714	26.5	409	20.7	2,932	152	813,019	5,149,931
1923	26,682	10,495	37,177	9.5	....	1,508	688	27.5	589	33.8	3,415	152	819,465	5,216,990
Oreg.-Wash. R. R. & Nav. 1924	7,075	4,023	11,098	3.1	....	1,413	667	27.5	402	20.7	2,049	234	247,349	1,613,152
1923	5,100	5,434	10,534	3.0	....	1,360	614	27.9	494	28.0	2,381	247	255,680	1,666,238
Central Western Region:														
Atch., Top. & S. Fe 1924	49,977	15,709	65,686	6.5	10,272	1,521	570	21.3	417	30.1	2,777	162	1,854,414	14,164,845
1923	38,553	24,760	63,313	6.5	2,879	1,460	563	22.2	512	35.9	3,290	163	1,845,907	13,922,735
Chicago & Alton 1924	9,000	6,042	15,042	3.2	....	1,301	586	27.8	444	25.3	6.607	210	290,380	1,683,544
1923	5,865	9,031	14,896	8.4	....	1,328	632	29.7	522	27.3	7,694	214	291,647	1,690,872
Chi., Burl. & Quincy 1924	49,609	22,962	72,571	6.4	....	1,521	719	29.3	581	31.7	4,513	198	1,504,623	9,443,470
1923	35,705	34,432	70,137	7.2	....	1,626	779	30.1	695	37.2	5,227	184	1,497,967	9,497,862
Chi., Rock I. & Pacific 1924	33,113	21,684	54,797	8.5	7,095	1,117	465	22.7	398	26.5	2,859	213	1,299,804	7,456,720
1923	21,785	19,463	41,248	10.5	467	1,146	512	24.1	573	34.1	3,096	209	1,295,058	7,321,677
Denver & R. G. Wn. 1924	12,823	3,572	16,395	6.0	3,190	1,280	619	29.8	335	17.1	2.115	258	224,999	1,404,450
1923	10,676	5,240	15,916	9.9	753	1,186	578	29.5	324	16.4	1.990	277	227,009	1,460,057
Oregon Short Line 1924	7,210	5,445	12,655	5.4	....	1,417	682	29.5	634	31.2	3,393	161	285,960	2,006,993
1923	5.432	4,819	10,251	6.2	157	1,333	604	29.4	836	46.5	3.622	164	284,231	1,995,051
Southern P. (P. System) 1924	22,434	24,978	47,412	5.7	7,419	1,648	668	23.7	521	33.4	3,553	154	1,450,081	11,453,235
1923	17,361	22,277	39,638	4.8	2,498	1,624	670	23.1	593	37.3	3,398	160	1,330,008	10,820,857
Union Pacific 1924	17,681	8,227	25,908	10.9	....	1,609	720	24.4	855	48.3	5,961	165	855,806	6,765,840
1923	12,021	11,645	23,666	6.5	2,459	1,445	623	23.8	963	58.6	6,145	181	863,455	6,717,022
Southwestern Region:														
Gulf, Colo. & S. Fe 1924	9,115	4.467	13,582	3.8	2,624	1,609	729	25.6	430	24.5	3,081	132	193,387	1,141,102
1923	6,135	5,470	11,605	4.6	1,060	1,493	680	26.1	472	27.0	2.889	146	197,240	1,144,636
Mo.-Kans.-Tex. 1924	8,795	6,771	15,566	4.0	3,618	1,682	678	22.7	352	24.6	3.039	140	272.773	1,879,821
1923	8,287	10,504	18,791	7.3	....	1,462	611	22.9	303	20.0	2,869	160	287,301	2,016,197
Mo.-Kans.-Tex. of Tex. 1924	280	10,957	11,237	10.5	3,186	1,308	519	22.4	289	20.1	2,336	151	253,325	1,536,961
1923	420	9,863	10,283	7.0	....	1,070	441	23.2	312	20.3	1,844	176	240,510	1,546,990
Missouri Pacific 1924	26,738	22,337	49,075	8.4	....	1,411	654	26.5	544	29.9	3,653	167	1,021,674	5,736,526
1923	20,623	37,568	58,191	7.5	....	1,341	639	26.6	360	18.7	2,942	189	990,144	5,614,316
St. Louis-San Francisco 1924	19,623	12,316	31,939	5.2	....	1,067	456	24.4	384	24.2	2,617	212	759,843	4,465,047
1923	13,172	21,190	34,362	6.7	....	1,009	463	25.6	366	20.3	2,686	243	733,176	4,084,153
Southern Pacific Lines (in Tex. and La.) [3] 1924	8 091	15,262	23,353	5.0	2,947	1,230	530	25.4	484	29.0	3.043	137	536,718	3,776,347
1923	6,076	15,129	21,205	5.8	....	1,258	572	26.4	544	30.7	3,111	138	544,469	3,658,904
Texas & Pacific 1924	5,621	6,183	11,804	7.9	....	1,268	501	21.4	432	30.1	2,611	162	285,638	1,932,139
1923	4,069	10,658	14,727	13.7	....	1,335	536	21.1	325	21.6	2,451	171	289,910	1,869.692

[3] Includes Galveston, Harrisburg & San Antonio, Houston & Shreveport, Houston & Texas Central, Houston East & West Texas, Iberia & Vermillion, Lake Charles & Northern, Louisiana Western, Morgan's La. & Tex. R. R. & S. S. Co., and Texas & New Orleans.
Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Traffic News

The Canadian Pacific has made arrangements whereby tourists in the Canadian Rockies this summer may participate in six-day riding and walking tours from Banff, B. C., during July, August and September. Pack trains will be operated in connection with the tours, carrying baggage and providing riding ponies.

Members of the City Passenger Agents' Association of New York City, to the number of about 80, went to Montreal and Quebec last week Friday, calling the excursion their first annual spring outing. After sight-seeing at Montreal, followed by a luncheon on one of the steamships of the Canadian Pacific, they went on Saturday night to Quebec by Canadian Pacific steamship; and on Sunday visited the shrine of St. Anne de Beaupre.

The new through train from Washington to Montreal, by way of New York and Springfield, which will be put in service on June 15, will leave Washington at 2:05 p. m. and the corresponding southbound train will arrive in Washington at 2:15 p. m. Besides the through sleeping cars to and from Montreal, Quebec and St. Albans, the trains will have parlor cars between Washington and Springfield. With the advent of these trains, the New Haven road will be operating nine trains, five southward and four northward, for which New York City will be a way station.

Claiming that it is a disguised attempt on the part of the railways to secure a substantial increase in freight rates, the Canadian Council of Agriculture, with headquarters in Winnipeg, has forwarded to the Dominion Board of Railway Commissioners a strongly worded protest against the proposed freight rates classification No. 17 being made effective. In a letter addressed to Frank B. Carvell, chairman of the Dominion Railway Board, it is pointed out that under the new classification it is proposed to raise the rating of hundreds of different commodities which show increases far outweighing those for which decreases have been proposed. An important point raised by the Council of Agriculture is in regard to the goods which may be placed in a car and shipped at carload rates. In Eastern Canada and throughout the United States what is known as the open mixture rate prevails, which means that two or more different classes of commodities may be shipped in one car at carload rate. In Western Canada, however, it is pointed out, and in the case of goods moving from Eastern to Western Canada or vice versa, only goods which appear in classification under distinctive headings may be mixed at carload rate. This difference between Eastern and Western rules is characterized by the Council of Agriculture as a distinct discrimination against the Western merchant and consumer, and to it is attributed the present high cost of distribution.

Circular No. 604

Every shipper who has had occasion to collect from the carrier a claim for an overcharge in a freight bill, where the error was due to misdescription of goods, and who realizes the inconvenience (or loss) usually entailed by such an incident, will be interested in a circular recently issued by the National Industrial Traffic League, explaining the needlessness of such errors. Shipping clerks and others who are careless in filling out bills of lading are still among us, and every local freight agent has the duty of preaching good practice in this matter.

The circular referred to was issued following the last annual meeting of the league, and is circular No. 604. Referring particularly to freight moving from the eastern states to the Pacific Coast, it cites examples illustrating the definite losses which shippers are liable to incur by failing to put into their bills of lading an accurate description. For instance, "dry goods" must be billed first class, but domestic cotton dress goods are much lower. Hardware is second class, $4.80; but mower knives go for $3.75; and iron lamp brackets for $3.405; dry goods, first class $5.55; but cotton sheeting is $3.405 and cotton or linen thread, on spools, is the same.

Shippers who are in doubt how to describe a shipment of dry goods, or hardware or of any commodity which is susceptible of variant descriptions, can apply to their local chamber of commerce or to the general freight agent of the railroad with which they deal.

Commission and Court News

Court News

Insufficient Evidence of Freezing of Cattle

A carload of cattle, on the road for 24 hours under an average temperature of 6 degrees below zero, was wrongfully diverted for the next 2½ hours when the average temperature was above zero. Several were dead when unloaded. The Montana Supreme Court holds that the evidence did not justify a finding that their death was caused by freezing while wrongfully diverted.—McKinster v. Great Northern (Mont.) 218 Pac. 87.

Accident from Discarded Railroad Spike Striking Passenger on Platform

Where a passenger, waiting on the platform for an approaching train, was struck by a discarded railroad spike just before the engine reached him, no evidence showing where the spike came from, and the track having been inspected 35 or 40 minutes previously, the Circuit Court of Appeals, Eighth Circuit, held that a verdict should have been directed for the defendant railroad in an action for injuries.—St. Louis-San Francisco v. Gleaves, 294 Fed. 523.

Contributory Negligence Always for Jury Under Oklahoma Constitution

Under the Oklahoma Constitution the defense of contributory negligence is always a question of fact for the jury and not a question of law for the court, and it is held that in instructing the jury what particular precautions were necessary to free the driver of a truck destroyed by a train at a crossing from contributory negligence before the owner of the truck could recover the trial court was invading the province of the jury and depriving the plaintiff of a constitutional right.—Mascho v. Hines (Okla.) 217 Pac. 856.

Express Companies Carriers by Railroad Under Section 15, Pars. 3 and 4 of Interstate Commerce Act

The federal district court for northern Georgia holds that the words "carriers by railroad" as used in paragraphs 3 and 4 of section 15 of the Interstate Commerce Act include an express company using a railroad in its carriage, and an order under paragraph 3 establishing additional through routes over connecting express lines transgresses the prohibition of paragraph 4 against requiring any carrier by railroad to embrace in its route substantially less than the entire length of its railroad.—American Railway Express Co. v. United States, 293 Fed. 31.

Carrier Restricted to Cheaper Route

Where a shipper gives no routing directions, and the carrier, having a choice of two routes, forwards freight over the more expensive, it is liable to the shipper for the difference in the tariff rates (Poor v. C. B. & Q., 12 I. C. C. 469), and the Interstate Commerce Commission has issued a general permissive order under which carriers may adjust the differences in such cases without resorting to the commission for special authority.

The Atlantic Coast Line forwarded a shipment of cattle, received without routing directions, from Kissimee to New Orleans by Montgomery in preference to the shorter route by Mason. The parties settled a dispute about the tariff rate by the railroad making a refund. It afterwards brought suit to recover at the tariff rate via Montgomery. The federal court, Southern District, Texas, holds that the carrier could not recover this rate, but was restricted to the rate via Macon, and that the A. C. L. did not have the right to route the freight by Montgomery because it thereby obtained a larger portion of the haul.

Such an action, to recover money paid on a settlement, was held not one on express contract, but an implied contract, and so barred in two years under Texas statute of limitations.—Galveston, Houston & San Antonio v. Lykes Bros., 294 Fed. 968.

Labor News

The Railroad Labor Board has appointed a hearing, to be held on June 3, on the question of increased wages and changes in working rules for enginemen on the western railways. Representatives of the two brotherhoods and officers of nearly all of the railroads have been summoned. Warren S. Stone (B. L. E.) and D. B. Robertson (B. L. F. & E.) have made to the Labor Board a statement claiming that the board is without right to intervene, as negotiations have been kept up with individual western roads and there is no prospect of an interruption of commerce.

Wage schedule negotiations between the Canadian National and engineers and firemen employed on this line, members of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen opened this week in Montreal. About 7,000 men are affected. The men want a return to the 1921 rates of pay. Notice of a desire for revision of the schedule was sent in by the men some months ago. Wage negotiations are still proceeding between the Canadian Pacific and its enginemen and firemen. The men's demands are similar to those made by the employees of the Canadian National.

Telegraphers on Nickel Plate Threaten Strike

E. J. Manion, president of the Order of Railroad Telegraphers, has notified the Railroad Labor Board that telegraphers on the New York, Chicago & St. Louis will take a strike ballot unless the railway will meet the telegraphers in negotiations on existing disputes. Chairman Hooper of the Labor Board issued an order for representatives of both the railway and the labor organization to appear before the board for a hearing on May 22.

B. R. & P. Enginemen Threaten Strike

Employees in the engine service of the Buffalo, Rochester & Pittsburgh, following the refusal of the management to agree to an increase of five per cent in wages, are said to have threatened to strike; and the Railroad Labor Board intervened and issued an order to the brotherhoods and to the officers of the road to appear before the board for hearing on May 29. The railway company submitted the dispute to the board in writing.

Fourth Triennial Convention of the B. L. E.

The fourth triennial convention of the Brotherhood of Locomotive Engineers will be begun at Cleveland, O., on June 2 and will probably continue for three or four weeks. With the brotherhood already interested in several financial ventures and employing capital exceeding $130,000,000, further financial activities are contemplated.

The retiring officers are expected to be re-elected. President Warren S. Stone, whose term expires this year, has held the office consecutively since April 11, 1903, and has in every case been elected by acclamation and in later years has been unopposed. About 420 delegates will attend.

Switchmen's Representation Dispute to Labor Board

A dispute between the Brotherhood of Railroad Trainmen and 14 railroads entering the city of Chicago on the question of representation of switchmen in the Chicago switching district has been appealed to the Railroad Labor Board by the parties to the dispute. Hearing on the case has been set for June 16.

The question involved is whether switchmen represented by the brotherhood shall be represented as switchmen or whether they shall be affected by agreements negotiated on behalf of all classes of trainmen. The brotherhood argues that an agreement negotiated in 1919 to the effect that switchmen in the Chicago switching district should have their own representatives is still in effect, but the railway managements contend that this agreement has been superseded by revised schedules, since negotiated, which cover all trainmen.

Equipment and Supplies

Locomotives

THE DETROIT & TOLEDO SHORE LINE has ordered 3 Mikado type locomotives and 2 switching type (0-8-0) locomotives from the Baldwin Locomotive Works.

THE SEABOARD AIR LINE, reported in the *Railway Age* of May 17 as inquiring for 10 Mountain type locomotives, is also inquiring for 15 Mikado type locomotives.

Freight Cars

THE CARNEGIE STEEL COMPANY is inquiring for 50 gondola car bodies of 50 tons' capacity.

THE SANDY VALLEY & ELKHORN is asking the car builders for prices on repairing 500 hopper cars.

THE NITRATE RAILWAYS COMPANY is inquiring through the car builders for 100 flat cars of 35 tons' capacity.

Passenger Cars

THE SEABOARD AIR LINE contemplates buying from 20 to 25 steel cars for passenger service.

Signaling

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company a mechanical interlocking, 32 lever machine, for Andover, Ohio.

THE LEHIGH VALLEY has ordered from the General Railway Signal Company an electric interlocking, 46 working levers, for installation at Phillipsburg, N. J.

THE LONG ISLAND RAILROAD has ordered from the Union Switch & Signal Company 175 transformers, 195 vane relays and other apparatus necessary for use in connection with the reconstruction of the automatic signaling between Hillside, N. Y., and Babylon, made necessary because of the electrification of that section of the road.

THE NEW YORK CENTRAL has contracted with the General Railway Signal Company to furnish and install at Feura Bush, N. Y., two all electric plants for the hump yard at that place, which is the connection between the West Shore and the Hudson River Connecting Railroad. These plants will consist, at first, of 27 and 21 switch machines respectively, and there will be six signals at each of the two locations.

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company an electric interlocking, 128 lever machine, for installation by the railroad company's forces at Aurora, Ill. The order includes 14 color signals, 41 switch machines and other material. The Burlington also has ordered 51 light signals and other apparatus for automatic block signaling between Diamond Bluff, Wis., and Stockholm.

PASSENGER CARS ORDERED, INSTALLED AND RETIRED

Quarter	Domestic orders reported during quarter	No. installed during quarter	No. retired from service during quarter	No. owned or leased at end of quarter	No. under order or being constructed
Jan.-March	972	792	679	54,370	1,586
April-June	330	513	555	54,328	1,450
July-Sept.	173	553	531	54,349	1,231
Oct.-Dec.	338	861	948	54,262	832
Full year, 1923	2,214*	2,719	2,713	.....	.....
1924					
Jan.-March	559	699	431	54,519	970

(1) Details as to orders from *Railway Age* weekly reports. Figures include all domestic orders placed with builders and railroad shops.

(2) Figures in remaining columns from Car Service Division, A. R. A. quarterly report of passenger cars, Form C. S. 55 A. Figures cover only Class I roads reporting to Car Service Division and are not therefore strictly comparable with figures given in first two columns of table.

*Corrected figures.

Supply Trade News

The Link Belt Company, Chicago, is preparing plans for a two-story factory branch 60 by 100 ft., at Detroit, Mich.

The Economy Fuse & Mfg. Co., on June 1 will remove its Chicago district sales office from 536 Transportation building to larger quarters at 513 West Jackson boulevard.

The Speer-Harris Lumber Company, Wetumpka, Ala., has moved its general office and headquarters to Tallahassee, Florida, having discontinued its operations at Wetumpka.

The United Alloy Steel Corporation, Canton, Ohio, has removed its Chicago office to 1440 Straus building, corner Jackson and Michigan boulevard. **L. K. Townsend** is the district sales manager.

J. W. Fogg, manager of railroad sales of the **American Bolt Corporation** with headquarters at Chicago, has been promoted to assistant to the vice-president and general manager with the same headquarters.

Arthur L. Pearson, assistant vice-president of the **Bradford Corporation,** with headquarters at Chicago, has been promoted to general manager with general supervision over manufacturing operations and direct charge of the buying of materials and supplies.

C. D. Price, who for many years has been connected with the **Industrial Works,** Bay City, Mich., recently as traveling service engineer, has been appointed district sales manager of the St. Louis district with headquarters at the Railway Exchange building, St. Louis, Mo.

The Ulster Iron Works, with principal office at Dover, N. J., will hereafter conduct the sales of the products of its mill, which, for many years, have been known as Ulster Special staybolt iron, Ulster Special seamless hollow staybolt iron and Ulster engine bolt iron. **Howard A. Gray** has been appointed general manager of sales, with headquarters at the Chicago branch office, Peoples Gas building, and **Henry T. Bradley,** eastern sales manager, with headquarters at New York City. **E. W. Kavanagh, C. F. Barton** and **John H. Craigie** will also represent the Ulster Iron Works.

F. C. Pickard has been appointed works manager of the Erie, Pa., plant of the **Standard Stoker Company.** Mr. Pickard was born on September 20, 1880, at Trenton, Mich., and entered railroad service as a messenger boy on the Chicago, Hammond & Western, at Hammond, Ind., at the age of fourteen. Later he served two years at an apprenticeship to the machinist trade and then as a locomotive fireman. At Bedford, Ind., on the Southern Indiana, he finished two years' apprenticeship at the machinist trade and entered the road service as a fireman and engineman. He worked subsequently on various western railroads until 1905, when he went to the Pere Marquette as a machinist and served as machine foreman, erecting foreman and shop superintendent. In 1908 he left the Pere Marquette to go as master mechanic on the Mississippi Central and in 1909 returned to the Cincinnati, Hamilton & Dayton as master mechanic of the Indianapolis and Springfield division. During this period he was elected president of the International Railway General Foremen's Association and served for two terms. In 1911 he was appointed master mechanic of the Saginaw district of the Pere Marquette, and the following year he entered the service of the Delaware, Lackawanna & Western as division master mechanic at Buffalo, N. Y. Mr. Pickard has been a contributor to railroad clubs and technical journals on mechanical subjects. During this time he served as president of the Central Railway Club and as a member of the executive committee of the Niagara Frontier Car Inspection Association. He resigned from the Delaware, Lackawanna & Western in December, 1923, to become vice-president of the Talmage Manufacturing Company, Cleveland, Ohio, which position he now leaves to enter the service of the Standard Stoker Company, Inc., as works manager of its Erie plant.

Westinghouse Electric & Manufacturing Company

The net income of the Westinghouse Electric & Manufacturing Company for the year ended March 31, 1924, was $16,125,303, as shown by the company's annual report. This represents earnings of $8.98 per share, or practically 18 per cent on the aggregate $89,775,150 stock outstanding during the year. In 1922 the net income was $12,263,486, or $8.19 a share on $74,812,650 stock then outstanding. Gross sales for the year amounted to $154,412,918, which exceed those of any previous year in the history of the company, except the year ended March 31, 1919. The value of unfilled orders at the close of the fiscal year was $63,738,702 as compared with last year's figures of $61,914,237.

New stock to the value of $17,955,000 was offered for subscription by the stockholders payable on April 16, and a stock dividend of 10 per cent, or $10,773,000, was declared payable to stockholders of record May 2, 1924.

General Guy E. Tripp, chairman of the board, calls attention to the fact that 31,819 employees were insured under the company's insurance and savings plan adopted in 1920 and that the total amount of savings held in the fund on March 31, 1924, was $2,845,853.

The consolidated general balance sheet follows:

ASSETS

Property and plant	$57,363,790
Investments	14,885,244
Cash	10,923,800
Subscriptions to common capital stock	18,974,856
Cash on deposit for redemption of bonds, etc.	52,166
Notes receivable	8,730,676
Accounts receivable	33,111,004
Common stock held for subscription payments	553,850
Inventories	80,863,048
Other assets	5,971,657
Total	$231,430,092

LIABILITIES

Capital stock:	
Preferred	$3,998,700
Common	85,776,450
Common—to be issued—offered to stockholders—underwritten	17,955,000
Common—to be issued—stock dividend	10,773,000
Funded debt	36,242,000
Current liabilities	25,730,414
Reserves	5,367,810
Profit and loss—surplus	48,586,718
Total	$231,430,092

Obituary

John Emory Meek, vice-president of the Johns-Manville, Incorporated, New York, died suddenly on May 24 at White Sulphur Springs, W. Va. He had been recuperating from an attack of rheumatism. Mr. Meek was born at State College, Pa. He served seven years with the Pennsylvania Railroad at Altoona, Pa., shops, later going to Denver, Colo., in 1888, remaining there for six years, the last three of which he was chief engineer of power plant. Mr. Meek entered the employ of the H. W. Johns Company, New York City in 1894 and went with the new organization of the H. W. Johns-Manville Company in 1902. He formed the railroad and United States government departments of this company in 1906, and held the position of general manager of same until March, 1924, when he was promoted to vice-president, retaining direct supervision of these departments in addition to other duties. Mr. Meek was also a director of Johns-Manville, Incorporated. He was a member of a number of clubs including the Engineers' Club and the New York Railroad Club.

J. E. Meek

Railway Construction

CENTRAL OF GEORGIA.—This company has awarded the following contracts for work in connection with extensive line and grade revision work which it is undertaking on its Columbus division: to the Brooks-Callaway Company, Atlanta, Ga., $1,440,000; the Luck Company, Ashville, N. C., $275,000; to the O'Brien Construction Company, Inc., Birmingham, Ala., $305,000; to the Hardaway Contracting Company, Columbus, Ga., $158,000; to J. A. Kreis, Knoxville, Tenn., $780,000; and to the Nichols Contracting Company, Atlanta, Ga., $205,000.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to the Chicago Bridge & Iron Works, Chicago, for the erection of water treating plants at Elsberry, Mo., Machens and Louisiana.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company, jointly with the New York, Chicago & St. Louis, is making preliminary strides for the elevation of their adjoining tracks from East Market street to Massachusetts avenue, in Indianapolis, Ind., a distance of approximately one-half mile. Four subways will be constructed, and the entire project is estimated to cost $750,000.

ILLINOIS CENTRAL.—This company will soon call for bids for the construction of five subways under its tracks at Jackson, Miss. This work, which is part of a track elevation project at Jackson, will cost approximately $1,250,000. Plans for the subways are now being prepared.

INDIANAPOLIS UNION.—This company is making preliminary studies for the elevation of its tracks in Indianapolis, Ind., from Prospect street to West Eighteenth street, a project involving the elevation of approximately five miles of four track and two and one-half miles of double track line. The construction will include 30 subways, with connecting retaining walls, in addition to undergrade construction for seven intersecting railroad lines. The plans include the construction of a reinforced concrete arch bridge across the White river. The entire project is estimated to cost $10,000,000.

NEW YORK CENTRAL.—This company has reached an agreement with the city of Toledo, O., under which it will pay 65 per cent of the cost of constructing a subway under its tracks at Detroit avenue in Toledo. The total cost of the improvement is estimated at $400,000.

NORTHERN PACIFIC.—This company is reported to be planning the construction of a branch line from McCleary, Wash., to Shelton.

PENNSYLVANIA.—This company, jointly with the Cincinnati, Indianapolis & Western, is making preliminary studies for the elevation of the adjoining tracks of the two companies in Indianapolis, Ind., from Davidson street to State street, a distance of approximately three-quarters of a mile. The project includes the construction of five subways with connecting retaining walls, at an estimated cost of $1,500,000.

READING.—This company has awarded contracts to Martin & Breen, Inc., Philadelphia, for the substructure and to the McClintic-Marshall Company, Philadelphia, for the superstructure required for the reconstruction of a bridge over Crum creek, south of Darby creek, on its Chester branch.

ST. LOUIS-SAN FRANCISCO.—This company contemplates the construction at some time in the future of a combined passenger station and office building at Tulsa, Okla.

VICKSBURG, SHREVEPORT & PACIFIC.—This company plans the construction of a freight and passenger station at Monroe, La.

WESTERN PACIFIC.—This company is reported to have awarded a contract to W. A. Betchel, San Francisco, Cal., for the construction of a roundhouse, car repair shop and storehouse at Stockton, Cal.

Railway Financial News

BALTIMORE & OHIO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $5,570,000 of refunding and general mortgage 6 per cent bonds, to be pledged as collateral for short term notes, and also to issue bonds of certain subsidiary companies to be pledged as further security under the refunding and general mortgage.

CAROLINA & YADKIN RIVER.—*Acquisition.*—See High Point, Thomasville & Denton.

CHICAGO GREAT WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $2,000,000 of first mortgage 4 per cent bonds to reimburse the treasury.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Bonds.*—This company has been authorized by the Interstate Commerce Commission to sell $1,000,000 of first and general mortgage 6 per cent gold bonds at not less than 96.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*Bonds Offered.*—A syndicate composed of J. P. Morgan & Co., the First National Bank, the National City Company and the Guaranty Company of New York is offering $20,000,000 refunding and improvement mortgage 5 per cent bonds, series "D," due January 1, 1963, at 94½ and accrued interest, to yield 5.35 per cent. The proceeds will be used to reimburse the treasury of the company for large expenditures already made and to provide funds for further improvements.

GREAT NORTHERN.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to assume obligation and liability in respect of $4,400,000 5 per cent equipment trust certificates for the purchase, building and rebuilding of 3,000 refrigerator cars for the Western Fruit Express Company, to be sold at not less than 97.

HIGH POINT, THOMASVILLE & DENTON.—*Acquisition.*—This company has been authorized by the Interstate Commerce Commission to acquire the line formerly owned by the Carolina & Yadkin River.

KANSAS CITY & NORTHWESTERN.—*Court Orders Sale.*—The sale of all property of the Kansas City & Northwestern in Gage county, Nebr., has been ordered by a district court at Beatrice, Nebr., to pay for back taxes since 1914 which amount to approximately $9,000. The sale is to be held on June 26. Since all equipment has been removed, the sale will involve only the tracks and the station at Virginia, Nebr.

LONG ISLAND.—*Tentative Valuation.*—The Interstate Commerce Commission has served a tentative valuation of the property of this company and its subsidiaries as of June 30, 1916, placing the final value of the property owned at $70,787,114 and of the property used at $93,201,517. The outstanding capitalization on valuation date was $87,873,627 and its investment in road and equipment was stated on the books as $73,320,133. This the commission readjusts to $62,179,304. The cost of reproduction new of the property used is stated as $68,197,205 and the cost of reproduction less depreciation as $54,908,677.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*New Directors.*—E. L. Carpenter, John Crosby and S. W. Dippenhoefer were elected directors at a meeting of the stockholders on May 21.

See also Wisconsin Central, item below.

MINNESOTA WESTERN.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to operate a line heretofore operated by the Electric Short Line, and states that it proposes to issue for the purpose $1,500,000 of preferred stock and $135,000 of first mortgage 5 per cent gold bonds.

MISSOURI PACIFIC.—*Control of N. O. T. & M.*—This company has applied to the Interstate Commerce Commission for authority

(*Continued on page* 1345)

Annual Report

The New York Central Railroad Company

Report of the Board of Directors to the Stockholders for the Year Ended December 31, 1923.

To the Stockholders of

THE NEW YORK CENTRAL RAILROAD CO.:

The Board of Directors herewith submits its report for the year ended December 31, 1923, with statements showing the income account and the financial condition of the company.

Road Operated

The following is a comparative table of the mileage operated:

	1923 Miles	1922 Miles	Decrease Miles
Main line and branches owned	3,715.96	3,716.11	.15
Leased lines	2,624.43	2,624.62	.19
Lines operated under trackage rights	549.17	559.24	10.07
Total road operated	6,889.56	6,899.97	10.41

The slight decrease in the mileage of owned and leased lines is caused by adjustments of measurements and changes in classification. In lines operated under trackage rights there was a decrease of 11.18 miles through the discontinuance of operation over the Pennsylvania Railroad from Rossiter to P. R. R. Junction and an increase of 13/100ths of a mile at Winchendon on the Boston and Maine Railroad; other minor changes being due to re-measurements and reclassification.

Increased Tonnage

During the year the company moved 132,576,120 tons of revenue freight, an increase over 1922 of 35,882,964 tons. Excluding the Ohio Central Lines, which were operated independently prior to 1922, the revenue tonnage of 1923 was substantially as great as that of 1918, the heaviest previous year. Of the increase in tonnage in 1923 over 1922, 52.46 per cent was in bituminous coal. This increase was due in some part to the subnormal movement in 1922, caused by the coal strike, but principally to co-operation of industries and dealers in stocking their coal requirements in advance of the usual seasonal rush, as a result of which there was practically no shortage of open-top cars at any time during the year. A similar improveed condition obtained in the case of cement and other commodities. There was no necessity during the year for the issue of any general embargoes restricting the free movement of traffic.

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INCOME ACCOUNT FOR THE YEAR

The Final Results of Operation of the Boston and Albany Railroad and of the Ohio Central Lines for 1922 and 1923 are Included in this Summary Under Separately Operated Properties—Profit, or Separately Operated Properties—Loss, as the Case May be. Separate Statistics for These Properties are Appended to This Report.

Operating Income—	Year ended Dec. 31, 1923	Year ended Dec. 31, 1922	Increase or Decrease
Railway Operations:	5,699.73 *miles operated*	5,710.08 *miles operated*	—10.35 *miles*
Railway operating revenues	$365,175,188.48	$316,620,098.02	$48,555,090.46
Railway operating expenses	278,602,021.02	250,400,469.63	28,201,551.39
Net revenue from railway operations	$86,573,167.46	$66,219,628.39	$20,353,539.07
Percentage of expenses to revenues	(76.29)	(79.09)	(—2.80)
Railway tax accruals	$20,053,594.49	$17,361,159.94	$2,692,434.55
Uncollectible railway revenues	98,159.39	53,416.69	44,742.70
Railway operating income	$66,421,413.58	$48,805,051.76	$17,616,361.82
Equipment rents, net debit	$4,126,179.96	$1,233,223.46	$2,892,956.50
Joint facility rents, net credit	3,520,565.64	2,999,715.64	520,850.00
Net railway operating income	$65,815,799.26	$50,571,543.94	$15,244,255.32
Miscellaneous Operations:			
Revenues	$1,175,446.31	$928,419.03	$247,027.28
Expenses and taxes	965,162.51	600,148.50	365,014.01
Miscellaneous operating income	$210,283.80	$328,270.53	—$117,986.73
Total operating income	$66,026,083.06	$50,899,814.47	$15,126,268.59
Non-operating Income—			
Income from lease of road	$120,947.04	$131,725.28	—$10,778.24
Miscellaneous rent income	2,114,060.59	1,985,592.09	128,468.50
Miscellaneous non-operating physical property	781,772.28	661,866.95	119,905.33
Separately operated properties—profit	3,460,024.05	1,520,309.00	1,939,715.05
Dividend income	14,464,454.98	10,309,802.89	4,154,652.09
Income from funded securities and accounts	3,250,635.48	3,418,230.56	—167,595.08
Income from unfunded securities and accounts	1,208,878.31	1,682,200.64	—473,322.33
Income from sinking and other reserve funds	148,620.02	90,740.20	57,879.82
Miscellaneous income	232,087.91*	749,193.35*	517,105.44
Total non-operating income	$25,317,304.84	$19,051,274.26	$6,266,030.58
Gross income	$91,343,387.90	$69,951,088.73	$21,392,299.17
Deductions from Gross Income—			
Rent for leased roads	$7,738,544.24	$6,690,584.92	$1,047,959.32
Miscellaneous rents	860,955.18	907,983.10	—$47,027.92
Miscellaneous tax accruals	281,944.99	269,685.70	12,259.29
Separately operated properties—loss	1,702,824.99	3,613,257.88	—1,910,432.89
Interest on funded debt	33,881,249.01	34,855,173.31	—973,924.30
Interest on unfunded debt	574,650.71	1,062,567.93	—487,917.22
Amortization of discount on funded debt	637,406.53	572,510.98	64,895.55
Maintenance of investment organization	5,111.58	4,507.57	604.01
Miscellaneous income charges	321,273.98	1,339,631.28	—1,018,357.30
Total deductions from gross income	$46,003,961.21	$49,315,902.67	—$3,311,941.46
Net income	$45,339,426.69	$20,635,186.06	$24,704,240.63
Disposition of Net Income—			
Dividends declared (6½ per cent 1923; 5 per cent 1922)	$17,432,978.43	$12,876,984.76	$4,555,993.67
Sinking and other reserve funds	144,753.67	114,329.96	30,423.71
Investment in physical property	12,917.05	.....	12,917.05
Total appropriations of income	$17,590,649.15	$12,991,314.72	$4,599,334.43
Surplus for the year carried to profit and loss	$27,748,777.54	$7,643,871.34	$20,104,906.20

*Debit balance.

Profit and Loss Account

Balance to credit of profit and loss, December 31, 1922	.....	$100,285,964.49
Additions:		
Surplus for the year 1923	$27,748,777.54	
Profit on road and equipment sold	38,882.14	
Sundry adjustments (net), unrefundable overcharges and uncollectible bills	216,086.38	
		28,003,746.06
		$128,289,710.55
Deductions:		
Surplus appropriated for investment in physical property	$172,234.80	
Depreciation prior to July 1, 1907, on equipment retired during year	2,509,630.12	
Loss on retired road and equipment	661,680.80	
Adjustment of accounts (net) in connection with final settlement with United States Government covering the federal control and guaranty periods	1,946,389.73	
Premium on collateral trust 10-year gold bonds taken up in 1923; called for redemption at 105 per cent of par September 1, 1922	166,225.00	
Adjustment of account in connection with settlement with Cleveland & Youngstown Railroad Company	1,054,442.93	
		6,510,603.38
Balance to credit of profit and loss, December 31, 1923	....	$121,779,107.17

Comparison of Revenues, Expenses and Freight and Passenger Statistics

The following comparisons of revenues, expenses and freight and passenger statistics exclude the Ohio Central Lines and the Boston and Albany Railroad, separate statements for which will be found appended to this report.

Revenues, Tonnage and Passengers

The total operating revenues were $365,175,188.48, an increase of $48,555,090.46.

Freight revenue was $235,652,032.59, an increase of $37,671,514.79. Revenue tonnage exceeded that of 1922 by 32,555,935 tons. Seventy-one per cent of this increase was in coal, coke and iron ore.

Passenger revenue was $85,931,138.88, an increase of $6,094,001.09. There were carried 55,210,449 passengers, an increase of 1,795,954. Of this increase 278,836 were interline, and 1,612,226 were commutation, partly offset by a decrease of 95,108 in local passengers.

The increase in commutation passengers reflects the growth of suburban communities. The decrease in local passengers is attributable to more extensive use of the automobile and to motor bus competition.

The increase in mail revenue, $532,924.88, and the increase in express revenue, $1,048,543.91, reflect the greater volume of such traffic.

Revenue from switching and demurrage increased $1,304,007.10 following the heavier tonnage of freight.

Incidental and other transportation revenues increased $1,904,098.69. A substantial portion of this increase was due to the greater volume of traffic handled over the coal and ore docks at Ashtabula and Buffalo.

Operating Expenses

Operating expenses were as follows:

Group	Amount	Increase
Maintenance of way and structures	$42,058,355.52	$7,181,989.46
Maintenance of equipment	92,523,861.44	9,530,903.90
Traffic	3,488,483.38	147,707.33*
Transportation	127,554,451.41	10,616,283.21
Miscellaneous operations	3,989,537.60	378,608.95
General	9,063,746.43	681,490.93
Transporation for investment—credit	76,414.76	40,017.73*
Total operating expenses	$278,602,021.02	$28,201,551.39

* Decrease.

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The increase in expense for maintenance of way and structures is due in large measure to favorable weather conditions during the season for track work and to a larger supply of available labor, which enabled the company to engage in a more comprehensive roadway program than in the previous

year, and in part to substantial wage increases. An increase in cost of removing snow, ice and sand of $482,654.61 is principally due to snow removal after the storm of January.

In the maintenance of equipment group, repairs to locomotives increased $3,012,856.59, due to more intensive use incident to handling the larger volume of business and to the program for putting motive power into the most efficient condition. The increase of approximately $2,000,000 in freight-train car depreciation was largely caused by adjustment in 1923 of charges for the federal control and guaranty periods in connection with equipment renewals in those periods, by which adjustment charges to capital account were increased and under which the higher rate of depreciation applicable under the company's practice to equipment acquired since January 1, 1918, was accrued upon the rebuilt units.

The decrease in traffic expenses is largely due to the unusual outlay in 1922 for tariffs in connection with rate changes in that year.

The increase in transportation expenses is principally due to greater volume of traffic. If there be eliminated, for purposes of comparison, large credit adjustments in 1923 in accruals for loss and damage to freight, the ratio of the total expenses of this group to operating revenues decreased 1.5 per cent.

The greater part of the increase in general expenses is due to increases in pay of clerks and attendants.

Railway Tax Accruals

The increase in railway tax accruals was $2,692,434.55, reflecting provision for larger income tax payments incident to the increase in net income.

Equipment and Joint Facility Rents

Net debit to equipment rents increased $2,892,956.50, the outstanding item being hire of freight-train cars, due to the greater mileage of refrigerator and other private cars on the line and to increase in traffic generally. Separate tables setting forth the details of equipment and joint facility rents will be found on page 44 of this report.

Non-operating Income

Non-operating income increased $6,266,030.58.

Profit from separately operated properties was $1,939,715.05 more than for 1922, of which $1,872,456.37 was from the Pittsburgh, McKeesport and Youghiogheny Railroad and $67,258.68 from the Boston and Albany Railroad.

The company received $4,154,652.09 more dividend income than in the previous year, of which $2,824,053.66 represents increased dividends from the Michigan Central Railroad Company, $142,172.25 increased dividends from The Cleveland, Cincinnati, Chicago and St. Louis Railway Company, and $510,161.25 dividends on the common stock of the New York State Railways.

Sales of securities and reduction in bills receivable outstanding account for the decrease in income from funded and from unfunded securities and accounts.

Deductions From Gross Income

There was a decrease in deductions from gross income of $3,311,941.46.

The New York Central Railroad Company

The increase of $1,047,959.32 in rent for leased roads is largely due to increase of traffic over the line of The Mahoning Coal Railroad Company, which receives as rental a percentage of gross revenues.

Loss from separately operated properties reflects a decreased deficit of $1,891,060.17 in the operation of the Ohio Central Lines and of $19,372.72 in the operation of New York State Railways over the Minoa Division.

Payment of installments on equipment trusts and reduction of other indebtedness account for the decreases in interest on funded and unfunded debt.

Practically all of the decrease of $1,018,357.30 in miscellaneous income charges compared with 1922 is due to the inclusion in that year of over $1,000,000 account of adjustments with the United States Railroad Administration covering expenses prior to January 1, 1918.

Net Income Before Dividends and Other Appropriations

The net income of the company was $45,339,426.69, an increase of $24,704,240.63.

Dividends

Effective with the quarterly payment on August 1, 1923, the rate of dividend was increased from a five per cent to a seven per cent annual basis.

Dividends declared and charged against net income of the year were as follows:

Date declared	Date payable	Rate per cent	Amount
March 28, 1923	May 1, 1923	1¾	$3,350,941.19
June 13, 1923	August 1, 1923	1¾	4,692,763.17
September 12, 1923	November 1, 1923	1¾	4,693,693.41
December 12, 1923	February 1, 1924	1¾	4,695,580.66
	Total	6½	$17,432,978.43

Net Corporate Income

After charges for dividends aggregating $17,432,978.43 and other appropriations amounting to $157,670.72, there remained a surplus of $27,748,777.54, which was carried to the credit of profit and loss.

Property Investment Accounts

Increases in the property investment accounts for the year, as shown in detail elsewhere in this report, were as follows:

Road	$13,824,558.03
Equipment	18,702,537.41
Miscellaneous physical property (decrease)	60,479.87
Improvements on leased railway property	3,550,539.48
Total	$36,017,155.05

Capital Stock

The outstanding capital stock of this company was increased during the year by the issue of $255,460 par value in exchange for preferred and common stock of The Cleveland, Cincinnati, Chicago and St. Louis Railway Company and by the issue of $86,000 par value in exchange for $87,000 of the company's twenty-year six per cent convertible debentures of 1915, and $3,300 in cash, under the conversion privilege contained in the debenture agreement. The capital stock in the hands of the public as of December 31, 1923, amounted to $268,323,375.

On December 12, 1923, the Board authorized, subject to the approval of the Interstate Commerce Commission, the issue of additional capital stock to an amount not exceeding $31,510,620.25 and the offer of such stock to stockholders of record on January 2, 1924, or their assigns, for subscription at par to the extent of ten per cent of their respective holdings, subject to decrease in such percentage should the amount of stock outstanding on that date be, by reason of conversion into stock of the company's 6 per cent convertible debenture bonds, in excess of $315,106,202.50. The offer was announced in the President's circular letter to stockholders, dated December 12, 1923. The proposed issue was approved by the Interstate Commerce Commission on December 31, 1923.

Changes in Funded Debt

The changes in the funded debt of the company, in detail, were as follows:

The amount on December 31, 1922, has been increased as follows:		$762,956,286.52
N. Y. C. Lines Equipment Trust 4½ per cent certificates of September 1, 1922	$8,535,000.00	
N. Y. C. Lines Equipment Trust 5 per cent certificates of June 1, 1923	6,930,000.00	15,465,000.00
		$778,421,286.52
and has been reduced as follows:		
N. Y. C. R. R. Co. 20-year 6 per cent convertible debentures exchanged for stock	$87,000.00	
Payment of ten-year promissory note—Secretary of the Treasury of the United States	609,000.00	
Payments falling due during the year and on January 1, 1924, on the company's liability for principal installments under equipment trust agreements as follows:		
N. Y. C. Lines Trust of 1910, January 1, 1924	1,406,413.74	
M. D. T. Co. Trust of 1911, July 1, 1923	75,000.00	
N. Y. C. Lines Trust of 1912, January 1, 1924	688,398.90	
Boston and Albany Trust of 1912, October 1, 1923	500,000.00	
N. Y. C. Lines Trust of 1913, January 1, 1924	742,117.61	
N. Y. C. R. R. Co. Trust of 1917, January 1, 1924	1,117,000.00	
Trust No. 43 of January 15, 1920, January 15, 1923	922,700.00	
N. Y. C. R. R. Co. Trust of 1920, April 15, 1923	1,153,167.33	
N. Y. C. Lines Trust of 1922, June 1, 1923	572,000.00	
N. Y. C. Lines 4½ per cent Trust of 1922, September 1, 1923	569,000.00	8,441,797.58
leaving the funded debt on December 31, 1923 a net increase of $7,023,202.42.		$769,979,488.94

Loans and Bills Payable

In addition to the funded debt, there was outstanding on December 31, 1923, a 5 per cent demand note evidencing loan from J. P. Morgan & Company of $3,000,000, the short term indebtedness of $12,513,000 shown in the annual report for 1922 having been liquidated.

New York Central Lines Equipment Trust of 1923

This trust was created by agreement dated June 1, 1923, to which The New York Central Railroad Company, The Michigan Central Railroad Company and The Cleveland, Cincinnati, Chicago and St. Louis Railway Company are parties. Under the trust $17,340,000 of 5 per cent equipment trust certificates maturing in equal annual installments of $1,156,000 over a period of fifteen years were issued, representing approximately 75 per cent of the cost of the equipment leased by the Trustee to the railroad companies.. The equipment allotted to this company under the trust, estimated to cost $9,275,299.03, consists of 50 coaches, 15 passenger and baggage cars, 30 motor passenger cars, 14 baggage cars, 75 milk cars, 2,000 hopper cars and 8 switching locomotives. The certificates are prorated among the railroad companies in proportion to the cost of the equipment allotted to each, this company's share being $6,930,000.

Guaranty of Additional Bonds of The Cleevland Terminals Company

During the year The Cleveland Union Terminals Company created a new series of its first mortgage bonds, known as series B, consisting of fifty-year 5 per cent bonds. The issue of $15,000,000 of this series of bonds was authorized in 1923, of which $5,000,000, jointly and severally guaranteed by this company and the other proprietors of the Terminals Company under guaranty agreement dated July 17, 1923, were issued and sold during the year.

Final Settlement with Railroad Administration

Agreement was reached with the Director General of Railroads under which the company paid to the United States Railroad Administration $23,000,000 in full settlement for itself (including the Boston and Albany and the Lake Erie and Pittsburg) and the other companies included in its contract—the Toledo and Ohio Central, the Kanawha & Michigan, the Kanawha and West Virginia and the Zanesville and Western—of balance due for the federal control period. The $23,000,000 payable to the Railroad Administration was distributed among the several companies as follows:

Net amount payable:		
New York Central (including B. & A.)	$21,347,039.14	
Toledo and Ohio Central	877,412.41	
Kanawha & Michigan	676,362.91	
Kanawha and West Virginia	162,696.49	$23,063,510.95
Net amount receivable:		
Zanesville and Western	$3,092.00	
Lake Erie and Pittsburg	60,418.95	63,510.95
Net total		$23,000,000.00

The amount of $21,347,039.14, above shown as net amount payable by this company, is the final balance agreed upon in general settlement after taking into account the various debits and credits arising under the contract and payments theretofore made by each party to the other. The total amount of compensation which accrued in the company's favor for use of its owned and leased lines during the period of federal control was $123,266,853.15. Prior to the final settlement there had been paid to the company from time to time on account of compensation and as cash advances $125,779,919.75 and the company had paid to the Director General $26,500,000 on account of additions and betterments. The total amount expended by the Director General for additions and betterments upon the company's owned and leased lines was $50,791,279.35, including $4,614,144.15 representing initial cash payment upon allocated equipment included in an equipment trust. The company provided for $28,437,154.31 of these improvements through the sale of its bonds.

Guaranty Period Settlement

During the year the Interstate Commerce Commission determined the amount due to the company by the United States Government for the so-called Guaranty Period, March 1 to August 31, 1920, under the provisions of Section 209 of the Transportation Act, 1920, to be $25,282,637.82. Of this amount $20,000,000 had been paid on account prior to 1923, leaving a balance of $5,282,637.82 which was received during the year in full settlement.

Industrial Development

During the year three hundred and ten new industries were located on this company's lines, traffic from which, it is estimated, will amount to about 110,000 carloads per annum.

Fifty-seven industries already established upon these lines increased their private siding facilities or leased additional property from the company, due to extension of their plants. It is estimated that these enlargements will result in additional traffic, amounting to approximately 32,500 carloads per annum.

Hudson River Connecting Railroad—Castleton Cut-Off

The Hudson River Connecting Railroad project, consisting of a high level line connecting the West Shore Railroad with the Boston and Albany Railroad and the Hudson Division of the New York Central Railroad at a location about 10 miles south of Albany, is a System improvement since in providing a route for heavy through freight traffic around Albany it will increase the capacity of the entire System to handle freight to and from the seaboard. Not only will the project effect a saving of about 4½ miles in distance, avoid 130 feet in rise and fall and long steep grades at the crossing of the Hudson Valley at Albany, and obviate draw-bridge delays at the river, but the concentration of traffic lines at one point will produce a sufficient volume of business moving from the Niagara River frontier and possibly beyond, destined for Albany gateway distribution, to permit full train loading to the point of concentration, thus eliminating intermediate classifications with attendant economy in time and expense.

The bridge, including the viaduct approaches on both sides of the river, will be a little more than a mile in length. The bridge proper will consist of two main spans, 600 feet and 400 feet in length, and will have a clear height of 135 feet above the river.

A gravity freight classification yard, to have a capacity ultimately of 11,000 cars, is being constructed at Selkirk. At this yard will be two modern engine houses, one for the accommodation of Mohawk Division locomotives and the other for Boston and Albany, West Shore and Hudson Division power, a large mechanical coaling plant, with adequate water storage, and other facilities. There will also be an artificial ice plant for the icing of refrigerator cars.

The project will require the construction of about 28 miles of new line. Twenty-one highway grade crossings will be replaced by fifteen crossings with separated grades.

The first stage of the work, that involving the connection between the West Shore Railroad and the Boston and Albany Railroad, including the river bridge, and the portion of the Selkirk yard necessary for the handling of the business of those lines, is expected to be in service in the latter part of 1924. At the end of 1923 the steel viaduct approaches on both shores of the river were practically finished, the masonry piers for the river spans were completed, the superstructure for the 400 foot span was in place and work upon the 600 foot span had begun. The grading of the yard and of the roadbed for the West Shore and Boston and Albany connection and the highway bridges were nearing completion. The engine houses were about 80 per cent completed and the coaling plant and other auxiliary facilities were well under way.

The connection with the Hudson Division, which is the second stage of the work, was well started at the end of the year and should be open for traffic in 1925.

The entire project was a little more than one-half completed at the end of 1923. To that time the New York Central had advanced $9,910,000 for the work.

Western Transit Company

The Western Transit Company, the entire capital stock of which was owned by this company, formerly operated a fleet of boats on the Great Lakes. By reason of the provisions of the Federal Panama Canal Act the company sold all of its floating equipment in March, 1916, and has not conducted transportation business since that time. The charter of the Western Transit Company expired on December 1, 1923, and its affairs are being settled by its directors as trustees, pursuant to the New York statutes. Its remaining assets, after payment of debts and expenses, will be tranferred to this company, as sole stockholder. On December 31, 1923, the books of the Western Transit Company showed an excess of assets over debts of $1,828,167.63.

Reduction of Capital Stock of Wells Fargo and Company

Under authority of the stockholders of Wells Fargo and Company, on February 6, the capital stock of that company was reduced from $24,000,000 to $12,000,000, the par value of each share having been reduced from $100 to $50 by the payment from capital assets of $50 in cash for each share. The 7,500 shares of Wells Fargo and Company stock owned by this company were received from the American Express Company as a dividend; therefore, the amount realized on the Wells Fargo and Company shares, $375,000, was credited to the ledger value of this company's holdings of the American Express Company's stock.

Opening of North-bound Driveway Around Easterly Side of Grand Central Terminal

The congestion of traffic on the streets within the Grand Central Terminal zone has resulted in a proposal by the city authorities that the present elevated roadway extending from the viaduct in Park Avenue at 42nd Street around the westerly side of the Terminal building to 45th Street be raised at the northerly end and extended over 45th Street to Park Avenue and thence on that avenue to 46th Street, reaching that point at grade, and that a corresponding elevated driveway be constructed around the easterly side of the Terminal building from Park Avenue and 42nd Street to 46th Street at Park Avenue; Vanderbilt Avenue to be extended from 45th to 47th Street. The plan further contemplates the closing of Park Avenue between 45th and 46th Streets, except for the elevated driveways for the passage of vehicular traffic and sidewalks for pedestrians at the present grade of the avenue, and the conveyance of this part of the avenue by the City to the company in exchange for the new easements required by the City, thus permitting construction by the company of a building (through which the proposed driveways will pass) bounded by 45th and 46th Streets, former Depew Place, and Vanderbilt Avenue extended. Negotiations looking to these improvements resulted during the year in the passage of enabling legislation. The plans and profiles and the form of agreements between the City and the company for the doing of the work by the latter have been substantially agreed upon with the Borough President and are ready for action by the Railroad Boards and by the Board of Estimate and Apportionment.

West Side Improvement—New York City

The improvement of the company's line on the west side of Manhattan and of the freight stations and facilities on that line has been under consideration for many years. The important freight stations—Manhattanville, 60th Street, 33rd Street and St. John's Park—do not meet present-day requirements. It will not be possible to modernize these stations until some agreement shall have been reached with the public authorities under which the use of streets and avenues at grade will be discontinued and electric operation extended to this part of the road. The elimination of grade crossings on this line is one of the few important problems of this kind remaining on the company's Lines East. Since operation by electricity has become practicable, it is desirable that this line be operated by electricity as a motive power.

After long negotiations with the city authorities under a Special Act passed in 1911, an agreement was substantially reached; but owing to opposition which resulted in hostile legislation in 1917 amending the Act of 1911, the agreement was not consummated. It is perhaps just as well for the company that it was not, because it would have been impossible, on account of war and its incident conditions, to have carried out the improvement at that time.

At the session of the Legislature in 1923 an Act was passed making it unlawful for any railroad operating within the limits of Greater New York to operate after January 1, 1926, within the limits of the city, with any motive power except electricity, to be generated, transmitted and used in a manner to be approved by the Public Service Commission, which was also directed to prescribe the various facilities required for electric operation. The company has applied to that Commission for its action under this statute.

The Transit Commission, which is the New York City Commission, has jurisdiction with respect to the elimination of grade crossings on this line. At the same time, the company presented a petition to that Commission for the elimination of all grade crossings, some 106 in number.

Since the presentation of these two applications, hearings, practically joint by the two commissions, have been held and the company has put in the principal part of its evidence bearing on the two questions of grade crossing elimination and electrification and the hearings have been postponed until January, 1924.

Automatic Train Control

The Interstate Commerce Commission on June 22, 1922, made an order requiring the installation of automatic train control upon a division of each of forty-nine railroads, among which were this company and the Boston and Albany Railroad. The order required that a division for such installation must be selected by January 1, 1923, and that the installation must be completed by January 1, 1925. The Train Control Committee of Signal Engineers, which had been studying the matter for many years on behalf of this company and its affiliated lines, recommended that the Mohawk Division and the division between Albany and Springfield, upon the Boston and Albany Railroad, should be selected, and prepared specifications and invitations for bids for the installation. These invitations were sent out on November 28, 1923, but the time for receiving and opening bids did not expire until after the close of the year.

Acquisition of Capital Stock of The Cleveland, Cincinnati, Chicago and St. Louis Railway Company

The company acquired during the year, under its offer of December 14, 1921, 2,181 shares of preferred stock of The Cleveland, Cincinnati, Chicago and St. Louis Railway Company, in exchange for which it issued a like number of shares of its own stock (par value $218,100), and 467 shares of common stock of that company, in exchange for which it issued 373.6 shares of its own stock (par value $37,360). At the end of the year the company held 84.55 per cent of the preferred, 91.31 of the common and 90.12 per cent of the total outstanding capital stock of The Cleveland, Cincinnati, Chicago and St. Louis Railway Company.

Acquisition of capital stock of The Michigan Central Railroad Company

The company acquired during the year 3,272 shares of capital stock of The Michigan Central Railroad Company at $350 per share, making its holdings on December 31, 1923, 177,647 shares of a par value of $17,764,700, or 94.81 per cent of the total outstanding.

Acquisition of capital stock of The Mahoning Coal Railroad Company

The company acquired during the year 988 shares of the preferred stock of The Mahoning Coal Railroad Company at $50 per share, making a total of 8,978 shares of preferred stock held by it. The proportion of preferred stock now held by the company is 67.87 per cent, of common stock 59.64 per cent, and of the total stock outstanding 62.16 per cent.

Acquisition of capital stock of The Trestle Realty Corporation

The capital stock of The Trestle Realty Corporation, owner of approximately one-third of a mile of track, a dock and certain real estate in Buffalo, was formerly owned, 1,510 shares by this company, 1,354 shares by the Fall Brook Coal Company, and 2,011 shares by the Reading Company. During the year the company purchased 927½ shares at a cost of $51,375.55, and the Reading Company 426½ shares of the stock formerly held by the Fall Brook Coal Company. In February, 1923, the capital stock of The Trestle Realty Corporation was increased from 4,875 shares to 5,000 shares, and in connection with the increase, this company and the Reading Company each acquired an additional 62½ shares at par, so that the investment of The New York Central Railroad Company and Reading Company in The Trestle Realty Corporation now stands at 2,500 shares each, of a par value of $100 per share.

Acquisition of capital stock of the Fort Wayne Union Railway Company

For the purpose of reaching the motor truck plant of the International Harvester Company and to open the territory in and about Fort Wayne for industrial development, the Fort Wayne Union Railway Company has been incorporated with an authorized capital stock of 3,000 shares of $100 par value, a total of $300,000. This company, the Pennsylvania Railroad Company, Wabash Railway Company and The New York, Chicago and St. Louis Railway Company each acquired 200 shares, or $20,000 par value, of the capital stock of the Fort Wayne Union Railway Company. The remaining $220,000 of stock will be issued from time to time by the Fort Wayne Union Railway Company in such amounts and upon such terms and conditions as shall be unanimously authorized by the Board of Directors of the company or by agreement of the proprietor companies.

Merchants Despatch, Incorporated

In the period between July 1 and December 31, 1923, approximately 8,000 refrigerator cars belonging to this company and approximately 3,000 belonging to The Michigan Central Railroad Company were leased to Merchants Despatch, Incorporated, (a subsidiary of the Merchants Despatch Transportation Company, the entire capital stock of which is owned by this company). This was done to permit greater specialization in the handling of perishable traffic and should result in better control of the cars, better earnings thereon and the securing of additional perishable business. Contracts will be negotiated for the use of these cars on foreign lines when not required to protect New York Central Lines' originations. Merchants Despatch, Incorporated, has also assumed responsibility for furnishing ice and supervising refrigeration of all perishable shipments on the New York Central Lines, thereby relieving the operating departments of the details of this highly specialized service.

Changes in Organization

The Board records the election or appointment of the following:

James B. Forgan, Director, January 10, to fill the vacancy caused by the death of Mr. William Rockefeller;

John K. Graves, Assistant Vice President, January 1;

Sidney B. Wight, Assistant to President, November 14;

William C. Bower, Manager Purchases and Stores, November 14;

Henry A. Stahl, Assistant General Treasurer, December 1.

Appreciative acknowledgment is made to officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors,

ALFRED H. SMITH,
President.

[ADVERTISEMENT]

(*Continued from page* 1341)

to acquire control of the New Orleans, Texas & Mexico by acquisition of its capital stock and also for an issue of $18,000,000 Missouri Pacific-New Orleans, Texas & Mexico collateral 7 per cent 15 year gold notes.

NEW ORLEANS, TEXAS & MEXICO.—*Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $8,748,000 of first mortgage 5½ per cent bonds, of which $7,734,000 are to be sold at not less than 94½ and $1,014,000 are to be exchanged or pledged in lieu of certain old first mortgage bonds.

NEW YORK CENTRAL.—*Annual Report.*—This company's annual report for 1923 is reviewed in an article on another page of this issue entitled "New York Central Has Best Year in History." See also excerpts from annual report on adjacent pages.

NEW YORK CENTRAL LINES.—*Equipment Trusts Sold.*—A syndicate headed by J. P. Morgan & Co. has sold $25,050,000 5 per cent equipment trust certificates, the initial offering of a $45,630,000 issue. The certificates will mature $1,670,000 annually on June 1, 1925 to 1939, inclusive.

C. H. Venner, a minority stockholder, has filed a suit in the United States District Court at Cleveland to prevent the Cleveland, Cincinnati, Chicago & St. Louis from entering into a joint equipment trust agreement. The complaint alleges that through its unlawful control of the Big Four, the New York Central had caused that railroad to enter into a joint equipment trust agreement with the New York Central, the Michigan Central and the Cincinnati Northern, under which the Big Four with the others guarantees payment of $45,630,000 equipment trust certificates to provide equipment for the four railroads. As the Big Four is to receive but 26⅔ per cent of the whole equipment, the New York Central Securities Corporation maintains that the Big Four should be held responsible for only about $12,068,000.

WHEELING & LAKE ERIE.—*Annual Report.*—The annual report for the year ended December 31, 1923, shows a net corporate income of $1,746,603 as compared with $206,267 in 1922. The income account follows:

Railway operating revenues		$19,211,572
Railway operating expenses		14,753,041
Net revenue from railway operations		$4,458,531
Taxes and uncollectible railway revenue		1,328,317
Operating income		$3,130,214
Non-operating income		172,136
Gross income		$3,302,350
Balance of income received in final settlement with the U. S. Government for guaranty period operations		202,547
		$3,504,897
Deductions from gross income:		
Equipment rents—net	$384,865	
Joint facility rents	36,108	
Interest and discount	1,337,322	
Total deductions		1,758,295
Corporate income for the year		$1,746,603

WISCONSIN CENTRAL AND MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Securities.*—The Interstate Commerce Commission has authorized the Wisconsin Central to issue and sell at not less than 97.75, $6,000,000 of three-year 5½ per cent secured gold notes, to procure the authentication and delivery of $2,594,000 of first and refunding mortgage 4 per cent bonds, and to pledge $8,000,000 of first and refunding mortgage bonds as collateral security for the notes. The Wisconsin Central and the Minneapolis St. Paul & Sault Ste. Marie were authorized jointly and severally to guarantee the interest at 5 per cent on $4,242,000 of Wisconsin Central first and refunding mortgage 4 per cent bonds now held by the Wisconsin Central and also the interest on the $2,594,000 of bonds above referred to, and the Soo was authorized to guarantee the notes and sell them at not less than 97.75.

Dividends Declared

Great Northern.—Preferred, 2½ per cent, semi-annually, payable August 1 to holders of record June 26.

Illinois Central leased lines.—2 per cent, payable July 1 to holders of record June 12.

New Orleans, Texas & Mexico.—1¾ per cent, quarterly; extra, 16½ per cent (4½ per cent cash, 6 per cent in scrip due September 1, 1924, and 6 per cent in scrip due December 1, 1924); payable June 2 to holders of record May 26.

Trend of Railway Stock and Bond Prices

	May 20	Last week	Last year
Average price of 20 representative railway stocks	64.20	63.20	64.99
Average price of 20 representative railway bonds	86.12	85.23	83.78

Railway Officers

Executive

O. B. Webb, assistant general passenger agent of the Texas & Pacific, with headquarters at Dallas, Tex., has been promoted to assistant to the president, with headquarters at New Orleans, La., a newly created position.

Duncan C. Grant, whose election as vice-president in charge of finance of the Canadian National, with headquarters at Montreal, Quebec, was announced in the *Railway Age* of May 24, page 1295, was born in 1880 at Toronto, and entered the service of the Bank of Toronto in 1897. For some time he was attached to the branch of the bank at Breckville, Ont., and in 1903 he was appointed assistant manager at Montreal. In 1913 he was transferred to Toronto as assistant manager of the office in that city. He held this position until 1915 when he was appointed inspector and a few months later he became chief inspector. Mr. Grant was serving in that capacity at the time of his recent election as vice-president in charge of finance of the Canadian National. The duties of this office have been carried on under the president's office since the resignation a year ago of Graham A. Bell, who is now Deputy Minister of Railways and Canals at Ottawa.

D. C. Grant

William Walliser, whose election as vice-president in charge of personnel of the Chicago & North Western, with headquarters at Chicago, was announced in the *Railway Age* of May 24, page 1295, was born on July 27, 1866, at West Chicago, Ill. He entered railway service in May, 1883, as an engine caretaker and subsequently served as locomotive fireman, freight brakeman and freight conductor. He was promoted to trainmaster on the Galena division in November, 1902, and in November of the following year, was promoted to assistant superintendent. Mr. Walliser was promoted to superintendent of the Minnesota division in March, 1909, and he held this position until May, 1911, when he was transferred to the East Iowa division. He was promoted to assistant to the general manager in January, 1914, and continued in this position until November, 1918, when he was promoted to assistant general manager, with headquarters at Chicago. Mr. Walliser was serving in this capacity at the time of his recent election as vice-president in charge of personnel.

W. Walliser

J. L. Lancaster, receiver for the Texas & Pacific Railway, has been elected president of the re-organized company, the Texas & Pacific Railroad, with headquarters at Dallas, Tex. **William H. Williams** of New York, has been elected chairman of the board of directors.

Frank Walters, whose election as vice-president in charge of operation of the Chicago & North Western, with headquarters at Chicago, was announced in the *Railway Age* of May 24, page 1295, was born at Cedar Falls, Ia., and in 1882 entered railway service as a car checker on the Minneapolis & St. Louis. In August, 1883, he was appointed an operator on the Illinois Central and subsequently was promoted to agent and train dispatcher. He was appointed an operator on the Burlington, Cedar Rapids & Northern, now a part of the Chicago, Rock Island & Pacific, in May, 1886, and was promoted to train dispatcher in November of that year. Mr. Walters was promoted to chief train dispatcher in June, 1893, and he held this position until August, 1898, when he was appointed chief clerk to the vice-president. He was promoted to division superintendent in March, 1902, and when the Burlington, Cedar Rapids & Northern was consolidated with the Rock Island, was appointed division superintendent on the Rock Island. Mr. Walters entered the service of the Chicago & North Western in December, 1902, as assistant division superintendent. He was promoted to superintendent of the Sioux City division in July, 1903, and in October, 1905, he was promoted to assistant general superintendent of the Nebraska & Wyoming division. He was promoted to assistant general manager, with headquarters at Omaha, Nebr., in July, 1906, and in December of that year, was promoted to general manager of the lines west of the Missouri river. Mr. Walters was promoted to general manager of the entire system, with headquarters at Chicago, in June, 1918, and he continued in this position until his recent election as vice-president in charge of operation.

Mechanical

Gilbert Bisson has been appointed master mechanic of the Copper Range, with headquarters at Houghton, Mich.

Edward Clark has been appointed master mechanic of the Cornwall, with headquarters at Lebanon, Pa., succeeding John Wintersteen, promoted.

D. W. Cunningham, general master mechanic of the Missouri Pacific, with headquarters at Little Rock, Ark., has been appointed master mechanic, with headquarters at Jefferson City, Mo., succeeding **F. W. Gratiot,** who has been granted leave of absence and the position of general master mechanic at Little Rock has been abolished. **J. L. Butler** has been appointed master mechanic, with headquarters at Dupo, Ill.

Operating

V. M. Alexander, assistant to the chief operating officer of the Chicago & Alton, with headquarters at Chicago, has been granted leave of absence to engage in other business.

K. W. Fischer has been appointed inspector of transportation on the staff of the general manager of the Chicago, Burlington & Quincy, lines west of the Missouri river, with headquarters at Omaha, Nebr.

J. L. Kendall, superintendent of the Missouri division of the Missouri Pacific, with headquarters at Poplar Bluff, Mo., has been promoted to general superintendent of the Eastern district, with headquarters at St. Louis, Mo., succeeding R. C. White, promoted to engineer maintenance of way. **W. F. Kirk,** superintendent of the Central Kansas and Colorado division, with headquarters at Osawatomie, Kan., has been promoted to general superintendent of the Western district, with headquarters at Kansas City, Mo., succeeding C. B. Wildman, deceased. **J. W. Rea,** acting superintendent of the Eastern division, with headquarters at Jefferson City, Mo., has been promoted to superintendent of the Missouri division, succeeding Mr. Kendall. **D. O. Ouellet,** superintendent of the Central division, with headquarters at Van Buren, Ark., has been transferred to the St. Louis Terminals, succeeding **L. L. Kensinger,** who has been granted leave of absence on account of ill health. **T. W. Cheatham,** trainmaster of the Eastern division, with headquarters at Jefferson City, has been promoted to superintendent of the Central Kansas and Colorado division, succeeding Mr. Kirk. **W. E. Lamb,** trainmaster at Little Rock, Ark., has been promoted to superintendent of the Central division succeeding Mr. Ouellet. **W. P. Hayes,** trainmaster, with headquarters at Alexandria, La., has been transferred to Little Rock, succeeding Mr. Lamb. **J. C. Paslay,** trainmaster, with headquarters at Concordia, Kan., has been transferred to Jefferson City, succeeding Mr. Cheatham.

Engineering, Maintenance of Way and Signaling

R. C. White, general superintendent of the Eastern district of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to engineer maintenance of way, with the same headquarters, a newly created position.

J. R. Hoagland, principal assistant in the valuation department of the Chicago & Alton, has been promoted to valuation engineer, with headquarters at Chicago, succeeding R. A. Cook, whose promotion to chief engineer was reported in the *Railway Age* of May 10.

Special

G. A. Leithner has been appointed district manager of the Car Service division of the American Railway Association, with headquarters at San Francisco, Cal., in charge of a newly established district. Mr. Leithner's territory includes the states of California and Nevada, the state of Arizona with the exception of the main line and branches of the El Paso & Southwestern, those portions of the Southern Pacific lines in Oregon south of Ashland, Ore., and Kirk, and the portion of New Mexico north of but not including the main line and branches of the El Paso & Southwestern, west of but not including the line of the Atchison, Topeka & Santa Fe from El Paso, Tex., through Albuquerque to Santa Fe and west of the Denver & Rio Grande Western from Santa Fe to the Colorado state line. The parts of Arizona and New Mexico which have been assigned to Mr. Leithner have been withdrawn from the territory of R. C. Andrews, district manager at Dallas, Tex.

Obituary

C. A. Lamoreaux, formerly superintendent of the Wisconsin Central, died in Denver, Colo., on May 22.

George M. Kridler, assistant freight traffic manager of the Baltimore & Ohio, with headquarters at Chicago, died in that city on May 21.

J. H. Clemmitt, purchasing agent of the Norfolk & Western, with headquarters at Roanoke, Va., died on May 23. Mr. Clemmitt was born on November 20, 1881, at Richmond, Va., and entered railway service on October 16, 1896, with the Norfolk & Western. His entire railway service was with the Norfolk & Western.

C. B. Wildman, general superintendent of the Western district of the Missouri Pacific, with headquarters at Kansas City., Mo., died in that city on May 20. He was born on May 23, 1869, at Shipman, Ill., and entered railway service in April, 1883, in the operating department of the Chicago & Alton, and subsequently served as operator and dispatcher on that road, the Atchison, Topeka & Santa Fe, and the Northern Pacific. In 1893 Mr. Wildman was appointed a dispatcher on the Missouri, Kansas & Texas and later was promoted to chief dispatcher. He returned to the Chicago & Alton as chief dispatcher in 1898 and continued in that position until 1903, when he was appointed chief dispatcher of the Missouri Pacific. Mr. Wildman was later promoted to trainmaster and in 1909, to division superintendent. He was promoted to general superintendent of the Western district in 1918 and held that position until his death.